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Federal Communications Commission  
Washington, D.C. 20554**

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	)	
Fostering Innovation and Investment	)	
in the Wireless Communications Market	)	GN 09-157
	)	
Annual Report and Analysis of Competitive	)	
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Wireless including Commercial Mobile	)	
Services	)	WT Docket No. 09-66
	)	
<u>National Broadband Plan for our Future</u>	)	GN Docket No. 09-51

**Comments of Everett Ehrlich, Jeffrey Eisenach and Wayne Leighton**

We are pleased to provide our comments in the above-captioned proceedings in the form of the attached study, “The Impact of Regulation on Innovation and Choice in Wireless Communications.”

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# THE IMPACT OF REGULATION ON INNOVATION AND CHOICE IN WIRELESS COMMUNICATIONS

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*Proposals to increase regulation of mobile wireless services, for example, by applying “net neutrality” regulation, are often based on claims that such regulation would enhance innovation and increase consumer choice. In fact, they would have the opposite effect. The business practices that would be banned by such regulation are efficient mechanisms for spreading and reducing risk, lowering transactions costs, and enhancing marketing activities, all of which contribute to innovation and choice. Moreover, product differentiation increases competition and thus contributes both directly and indirectly to consumer choice. While some types of exclusive agreements and other “discriminatory” practices can theoretically harm competition, the precondition for such harm to occur – i.e., market power in one or more of the affected markets – generally is not present in wireless markets. Hence, the proposed regulations cannot be justified on grounds of market failure. Rather than increasing innovation and consumer choice, as promised, they would severely disrupt the wireless sector’s highly successful business model and significantly reduce innovation and consumer choice.*

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## I. INTRODUCTION

Economists have long recognized the potential for anticompetitive discrimination in industries where dominant firms have the incentive and the ability to protect or extend their market power by making it more difficult for rivals to compete. Historically, telecommunications was such an industry, especially during the statutory monopoly era, prior to the breakup of AT&T and the introduction of competition into local telecommunications markets. In those days, the Federal Communications Commission (FCC) responded by adopting a variety of regulations designed to thwart anticompetitive discrimination, ranging from functional separation of different lines of business to technological standards for mandatory interconnection.

By the same token, economists also recognize that discriminatory practices<sup>1</sup> can enhance efficiency and benefit consumers. For example, the bundling of customer premises equipment (CPE) with network services can allow firms to spread risk efficiently, capture economies of scope and scale, and mitigate market failures associated with transactions costs. By facilitating product differentiation, such practices not only contribute directly to increased consumer choice, but also facilitate competition in markets that might otherwise support only one or two competitors. Regulations that inhibit or ban such practices may thus have the unintended consequence of harming consumer welfare.

In 2005, the FCC adopted an *Internet Policy Statement*, in which it embraced “Four Principles of Internet Freedom,” stating that consumers have the right to connect the devices, use the applications and access the content of their choice, subject only to reasonable network management practices.<sup>2</sup> The Principles are extremely broad, and indeed were initially thought to be hortatory; in its 2008 *Comcast* decision, however, the Commission determined it would treat the Principles as *de facto* regulations, and enforce them against any and all wireline broadband providers.<sup>3</sup>

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<sup>1</sup> As used herein, the words “discrimination” and “discriminatory” refer to both harmful and beneficial practices; that is, the fact that a practice is referred to as “discriminatory” should not be interpreted as suggesting it is anticompetitive or otherwise harmful to consumers or competition.

<sup>2</sup> See Federal Communications Commission, *In the Matter of Appropriate Framework for Broadband Access to the Internet over Wireline Facilities, Policy Statement*, CC Docket No. 02-33 (2005) (*Internet Policy Statement*).

<sup>3</sup> See generally Federal Communications Commission, *Formal Complaint of Free Press and Public Knowledge Against Comcast Corporation for Secretly Degrading Peer-to-Peer Applications*, File No. EB-08-IH-1518, WC Docket No. 07-52, *Memorandum Opinion and Order* (2008) (*Comcast Order*). More recently, on September 21, 2009, Chairman Julius Genachowski announced that he intends to issue a Notice of Proposed Rulemaking to formalize the “four principles,” add two additional principles relating to non-discrimination and transparency, and clarify that all of these principles apply to wireless as well as wireline modalities. See Julius Genachowski, “Preserving a Free and Open Internet: A Platform for Innovation, Opportunity, and Prosperity” (Remarks Before

Beginning in 2007, advocates of increased wireless regulation began arguing for the extension of net neutrality principles and similar regulations to wireless carriers. The regulations they propose are very wide-ranging, with the potential to prohibit virtually all forms of product differentiation and exclusivity.

Some of regulation advocates' arguments can be summed up – simplistically, but we think fairly – as follows: “If carriers are prohibited by regulation from placing limits on how their networks are used, consumers will have more choices in how to use their networks.” While this is surely true in the short run (just as it is true that if firms were prohibited from charging for their products, consumers would pay less for them), it ignores the countervailing, longer-run benefits of such restrictions. At a somewhat more sophisticated level, regulation advocates argue that wireless carriers have market power and, as a result, have both the incentive and the ability to discriminate against some devices, applications or content, to the detriment of consumers. Such discrimination, they argue, prevents new products from coming to market and slows innovation while limiting consumer choice.

In this study, we examine the likely effects of proposals to regulate wireless industry business practices on consumer choice and innovation. We disagree with regulation advocates' arguments, for two primary reasons. First, there has been no demonstration of market failure in the markets at issue. While the markets for wireless carriage, devices, handsets and applications are (like most technology markets) characterized by product differentiation and dynamic competition, the temporary market power associated with such markets is a driver of competition and innovation, not a deterrent. There is no evidence of the more permanent, traditional type of market power (or “monopoly power”) which can allow dominant firms to charge supra-competitive prices or successfully exclude competitors. Absent such market power, there simply is no basis to believe the practices at issue are harmful.

Second, a careful analysis shows that the practices regulation advocates seek to ban are properly understood as efficiency-enhancing contractual provisions which promote innovation rather than discouraging it. The practices at issue represent mechanisms for achieving product differentiation (diversity of product offerings) and/or managing the risks and costs associated with innovation and the introduction of new products. Indeed, virtually all of the practices that would be banned contribute to innovation and consumer choice.

We also conclude that proposals for wireless regulation are overly broad. Not only would the proposed rules potentially prohibit a wide range of business practices that benefit consumers, but the only limiting principle regulation advocates have conceded is technical feasibility, a standard which effectively prohibits a balancing of benefits and costs. Rather than adopting sweeping regulations, policymakers should pursue a case-by-case approach in which a finding of market failure is a prerequisite for action, and the benefits of specific practices can be carefully weighed against their costs.

The remainder of this article is organized into four parts. In Part II, we briefly review the state of competition in the mobile wireless communications industry, concluding that the industry is highly competitive. In Part III, we present an exegesis designed to answer the question, “Precisely who and what would the proposed regulations regulate?” We conclude that they would have much broader effects than most people realize, including effectively regulating the practices of device manufacturers, applications providers and content providers. In Part IV, we explain how the practices that would be banned by the proposed regulations enhance efficiency, and how prohibiting those practices would slow innovation and reduce consumer choice. In Part V, we present brief concluding remarks.

## II. COMPETITION AND PERFORMANCE IN THE MARKET FOR WIRELESS COMMUNICATIONS

As we noted at the outset, economists agree that some forms of exclusivity or discriminatory behavior may have anticompetitive effects and potentially reduce consumer welfare if – but *only* if – the firm or firms involved possess sufficient market power. Such market power may be either traditional (the power to raise prices above the competitive level) or exclusionary (the power to raise rivals’ costs or otherwise make it difficult for rivals to enter or sustain themselves in the marketplace), and in theory may reside either in the market for carriage, or in one or more of the upstream markets (*i.e.*, applications, content or devices). In this section, we examine regulation advocates’ claims regarding market power and find them to be both unsupported and incorrect.

Advocates of increased wireless regulation generally seem to acknowledge that the existence of market power is a necessary condition for net neutrality and similar regulation to enhance consumer welfare.<sup>4</sup> In the wireline context, for example, they have dedicated substantial energy to arguing that telephone companies and cable companies behave as “cozy duopolists”<sup>5</sup> (a proposition we believe is at variance with the evidence).<sup>6</sup>

In the wireless sector, advocates of increased regulation have also based their arguments on the existence of market power. For example, Columbia University Professor Timothy Wu, in an influential 2007 paper, argued that that

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<sup>4</sup> For one exception, see Susan P. Crawford, “Transporting Communications,” *Boston University Law Review* (forthcoming) at 52 (“The idea of a non-discrimination rule did not come from competition law. Instead, it rests on common-law notions of social welfare and appropriate state function. Antitrust law, with its single-minded focus on firms competing in established markets, is ill-equipped to deal with discrimination by providers of physical transport networks for Internet access.”).

<sup>5</sup> See *e.g.*, *Network Neutrality: Competition, Innovation, and Nondiscriminatory Access*, Hearing before the Task Force on Telecom and Antitrust of the House Committee on the Judiciary (April 25, 2006), Testimony of Dr. Mark Cooper, on behalf of the Consumer Federation of America, Free Press, and Consumers Union. For reasons we have explained elsewhere, we believe the wireline market is highly competitive.

<sup>6</sup> See *e.g.*, Everett Ehrlich, “The Reality of Competition in the Broadband Market” (November 2008) (available at [www.evehrlich.net](http://www.evehrlich.net)), and Jeffrey A. Eisenach, “Broadband in the U.S. – Myths and Facts,” in *Australia’s Broadband Future: Four Doors to Greater Competition* (Melbourne: Committee for Economic Development of Australia, 2008) 48-59.

... the carrier market is simply not an open market. While entry is not impossible, under current conditions, it requires multi-billion dollar investments. The consequence is a spectrum-based oligopoly, not the ‘fiercely competitive’ market that is sometimes portrayed. The wireless market may be relatively competitive by the standards of the telecommunications industry and regulated industries like energy generation. But the U.S. wireless market is nothing like the market for blue jeans or vodka, and it is a mistake to so pretend.<sup>7</sup>

A coalition of interest groups that filed comments in the Federal Communication Commission’s *Skype* proceeding was more explicit, arguing that

Four national wireless carriers dominate the retail wireless services market. This dominance enables them to dictate what handset functionality will be available to customers.<sup>8</sup>

More recently, the liberal interest group Free Press advanced the notion that

A central premise in competition analysis is summed up by the quip “four is few, six is many.” In other words, when a market has fewer than the equivalent of six equal-sized competitors, the market just doesn’t function properly. Prices are well above cost-plus reasonable profit; investment is withheld until absolutely needed; innovation is actively discouraged; and consumer welfare suffers.<sup>9</sup>

Similarly, Skype argues that additional wireless regulation is necessary due to the market power of the major wireless carriers. Skype argues that “carriers are using their *considerable influence* over handset design and usage to maintain an inextricable tying of applications to their transmission networks”<sup>10</sup> and that “[t]he simple truth is that manufacturers depend upon carriers to market their devices, and no manufacturer can afford not to ‘play ball’ with the largest wireless carriers.”<sup>11</sup>

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<sup>7</sup> Tim Wu, *Wireless Net Neutrality: Cellular Carterfone and Consumer Choice in Mobile Broadband*, New America Foundation, Wireless Future Program, Working Paper # 17 (February 2007) at 3; *see also* Tim Wu, “Wireless Carterfone,” *International Journal of Communications* 1 (2007) 389.

<sup>8</sup> Skype Communications S.A.R.L., Petition to Confirm a Consumer’s Right to Use Internet Communications Software and Attach Devices to Wireless Networks, RM-11361, *Comments of the Ad Hoc Public Interest Spectrum Coalition* (April 30, 2007).

<sup>9</sup> *See* S. Derek Turner, *Dismantling Digital Deregulation: Toward a National Broadband Strategy*, Free Press, at 19, citing Testimony of Mark Cooper, Consumer Federation of America, before the U.S. Senate Committee on Commerce, Science and Transportation, Regarding Competition and Convergence (March 30, 2006), available at [http://www.freepress.net/files/Dismantling\\_Digital\\_Deregulation.pdf](http://www.freepress.net/files/Dismantling_Digital_Deregulation.pdf),

<sup>10</sup> Skype Communications S.A.R.L., Petition to Confirm a Consumer’s Right to Use Internet Communications Software and Attach Devices to Wireless Networks, RM-11361 (February 20, 2007) (*Skype Petition*) at 2 (emphasis added). (Subsequently incorporated in *Broadband Industry Practices: Notice of Inquiry*, WC Docket No. 07-52 (2007).

<sup>11</sup> *Skype Petition* at 22.

All of these arguments are contradicted by the available evidence. At the extreme, they are simply specious. It is simply not the case, for example, that competition analysis provides any support *at all* for the proposition that “the market just doesn’t function well” without six equally sized competitors.<sup>12</sup> Nor is it true, as Apple and Google have amply demonstrated in their dealings with wireless carriers, that device manufacturers cannot “afford to not play ball” with wireless carriers. And, while it is self-evidently true that the wireless market is “nothing like the market for blue jeans or vodka,” it is also true that no one has suggested it is.

Setting rhetoric aside, the evidence demonstrates that wireless carriers do not possess either traditional or exclusionary market power and that the upstream markets (which regulation advocates have generally ignored) are also, for the most part, highly competitive. In the remainder of this section, we review the key structural characteristics of the markets for wireless carriage and upstream products, respectively. We then review the overall performance of the wireless sector. We find that virtually all of the evidence demonstrates that the behaviors that offend regulation advocates cannot be explained as manifestations of market power by wireless carriers or anyone else.<sup>13</sup>

#### A. *The Carriage Market is Competitive*

Market power is a well-defined concept. A firm possesses traditional market power if it has the ability profitably to impose a small but significant and non-transitory increase in price (a “SSNIP”) above the competitive level.<sup>14</sup> A firm

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<sup>12</sup> For example, a market with six equally-sized competitors would have a Herfindahl-Hirschman Index (HHI) of 1,667, which falls in the “moderately” concentrated range as defined by the Department of Justice and Federal Trade Commission. (The HHI is equal to the sum of the squares of market shares (in percents) by all firms in the market.) See Department of Justice and Federal Trade Commission, *Horizontal Merger Guidelines*, (1997) at §1.51 (hereafter, *Guidelines*). More broadly, the consensus among economists, including the “post-Chicago” school, is that market concentration alone is not a good indicator of market power, as it fails to capture the dynamic character of competition. See, e.g., Jonathan B. Baker and Carl Shapiro, “Reinvigorating Horizontal Merger Enforcement,” in Robert Pitofsky, ed., *How the Chicago School Overshot the Mark* (Oxford: Oxford University Press, 2008) at 240 (“Generally speaking, the shift from a more formulaic approach based on market definition and market shares to an approach that places less weight on market structures, pays closer attention to possible expansion by smaller suppliers and entry by new ones, and exhibits less hostility to merger efficiencies, has been a big step toward more effective merger control policy. Like most economists, we support the modern approach, with its more nuanced, fact-intensive economic inquiry focusing on mechanisms of competitive effects.”)

<sup>13</sup> For other research that stresses the need to evaluate regulation in the context of market power, see Robert W. Hahn, Robert E. Litan and Hal J. Singer, “The Economics of ‘Wireless Net Neutrality,’” AEI-Brookings Joint Center for Regulatory Studies (April 2007); Jonathan Nuechterlein, “Antitrust Oversight of an Antitrust Dispute: An Institutional Perspective on the Net Neutrality Debate,” *Journal on Telecom and High Technology Law* 7 (2009)19-65; and, James Speta, “A Sensible Next Step on Network Neutrality: The Market Power Question,” *Review of Network Economics* 8:1 (2009) 113-27.

<sup>14</sup> See *Guidelines* §1.

possesses exclusionary market power if it has the ability to raise its rivals' costs or deter entry so as to impair the ability of actual or potential rivals' to constrain prices.<sup>15</sup> These definitions have been central to the FCC's approach to competition analysis for more than a decade.<sup>16</sup> The primary focus of regulation advocates is on exclusionary market power, in particular, the ability of network operators to exclude actual or potential competitors in upstream markets.

Conditions in the market for wireless carriage do not, however, support the existence of either traditional or exclusionary market power. Specifically, the U.S. market for wireless carriage is relatively unconcentrated, has experienced (and continues to experience) significant entry, and displays evidence of intense competitive conduct.

First, the U.S. market is extremely unconcentrated by international standards.<sup>17</sup> Indeed, a recent report by Merrill Lynch provides market share data for the U.S. and other OECD countries. As seen in Figure One, the data show that U.S. has the least concentrated wireless market when measured by the four-firm concentration ratio, and the second least concentrated market when measured by the HHI and the 2-firm concentration ratio.

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<sup>15</sup> See, e.g., Einer Elhauge, "Defining Better Monopolization Standards," *Stanford Law Review* 56 (2003) 253; Thomas G. Krattenmaker, Robert H. Lande and Steven C. Salop, "Monopoly Power and Market Power in Antitrust Law," *Georgetown Law Review* 76 (1987) 249-53; and, Thomas G. Krattenmaker and Stephen C. Salop, "Anticompetitive Exclusion: Raising Rivals' Costs to Achieve Power Over Price," *Yale Law Journal* 96 (1986) 234-45.

<sup>16</sup> See, e.g., Federal Communications Commission, *Regulatory Treatment of LEC Provision of Interexchange Services Originating in the LEC's Local Exchange Area and Policy and Rules Concerning the Interstate, Interexchange Marketplace, Third Report and Order*, CC Docket No. 96-61 (1997) at ¶83.

<sup>17</sup> While concentration in the market for wireless may, as Professor Wu suggests, be higher than in the market for vodka, it is also true that mobile wireless business exhibits economies of scale and scope which suggest that atomistic competition is neither an achievable nor a desirable objective. As economist Robert Atkinson notes, "Because of the nature of the broadband industry, there are significant tradeoffs between more competition and the goals of efficiency, innovation, lower prices, and higher speeds and broader deployment." See Robert D. Atkinson, "The Role of Competition in a National Broadband Policy," *Journal on Telecom and High Technology Law* 7 (2009) at 2.



**TABLE ONE:**  
**WIRELESS MARKET SHARES IN OECD COUNTRIES (MARCH 2009)<sup>18</sup>**

Country	Provider 1	Provider 2	Provider 3	Provider 4	Others	2-Firm Concentration Ratio	4-Firm Concentration Ratio	HHI
United Kingdom	26.6%	24.4%	21.7%	20.7%	6.6%	51%	93%	2240
United States	31.6%	28.6%	16.7%	12.1%	11.0%	60%	89%	2363
Germany	36.4%	33.2%	16.9%	13.6%		70%	100%	2890
Poland	33.0%	31.0%	30.1%	5.9%		64%	100%	2990
Italy	38.0%	33.1%	19.1%	9.8%		71%	100%	3000
Canada	36.9%	30.5%	28.4%	2.0%	2.2%	67%	98%	3110
Australia	40.9%	32.5%	17.8%	8.7%		73%	100%	3130
Austria	42.4%	31.6%	19.6%	6.4%		74%	100%	3220
Denmark	45.5%	26.9%	21.8%	5.8%		72%	100%	3300
Sweden	46.5%	29.1%	16.4%	7.9%		76%	100%	3340
France	43.6%	34.4%	16.9%	3.3%	1.9%	78%	98%	3380
Greece	42.4%	29.8%	27.7%			72%	100%	3460
Spain	44.5%	31.9%	21.5%	2.1%		76%	100%	3470
Finland	38.4%	38.3%	23.3%			77%	100%	3480
Czech Republic	41.3%	36.5%	22.2%			78%	100%	3530
Belgium	44.9%	31.0%	24.1%			76%	100%	3560
Japan	49.3%	27.9%	18.6%	4.1%		77%	100%	3580
Portugal	44.0%	35.7%	20.4%			80%	100%	3620
Hungary	46.5%	31.2%	22.3%			78%	100%	3630
Netherlands	51.3%	25.9%	22.8%			77%	100%	3820
Korea	50.5%	31.5%	18.0%			82%	100%	3870
Turkey	56.5%	24.0%	19.5%			81%	100%	4140
Switzerland	61.7%	20.6%	17.7%			82%	100%	4540
New Zealand	52.6%	47.4%				100%	100%	5010
Norway	54.3%	45.7%				100%	100%	5040
Mexico	72.5%	19.5%	4.5%	3.5%		92%	100%	5660

Source: Merrill Lynch, Q209 Wireless Matrix (July 2009); Empiris LLC

Moreover, as the table shows, the U.S. is one of only four OECD countries (the others being Canada, France and the UK) with more than four facilities-based wireless operators – and the U.S. has *more than 140 operators*, including (in addition to Verizon, AT&T, Sprint and T-Mobile) U.S. Cellular, Leap (Cricket), and MetroPCS, all firms with significant market shares and (as we discuss further below), a demonstrated ability to constrain prices and affect market conduct.

Additional competition comes in the form of MVNOs (mobile virtual network operators) who resell wholesale minutes bought from other providers. A number of these providers have entered the market in the last couple of years, while others have left or been purchased. The FCC's latest analysis cites two different sources, with one estimating "more than 40" and another estimating "about 55" MVNOs competing in this market.<sup>19</sup> These firms generally target

<sup>18</sup> U.S. shares and HHI adjusted to include Sprint pre-paid customers (which are excluded from the calculations in the Merrill Lynch report). The effect is to raise Sprint's share from 12.9% to 16.7%. Both the 4-firm concentration ratio and the HHI adjust upwards slightly as a result. On September 8, 2009, the Orange and T-Mobile, the third and fourth largest carriers in the United Kingdom, announced plans to merge. If the merger is approved, the U.S. would once again have the least concentrated market among OECD nations. See Maisie Ramsay, "T-Mobile, Orange to Merge U.K. Operations," *Wireless Week* (September 8, 2009) (available at <http://www.wirelessweek.com/News/2009/09/T-Mobile-Orange-Merge-UK-Operations/>).

<sup>19</sup> See Federal Communications Commission, *In the Matter of Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993 Annual Report and Analysis of Competitive Market Conditions With Respect to Commercial Mobile Services*,

niche markets. For example, TracFone Wireless offers pre-paid service, a successful model that has helped the firm gain more than 10 million customers, while Jitterbug has entered the market with a focus on seniors. This proliferation of services has allowed mobile access to spread quickly and to niches as well as the mass market. Most importantly, while advocates of increased regulation of the wireless market may be tempted to discount the competitive effects of MVNOs because they do not own networks, this would be a mistake. In fact, MVNOs have the ability to compete with facilities-based carriers on the characteristics that concern those who are most vocal in calling for new regulations, *i.e.*, they can pursue “non-discriminatory” business models if they believe that is what consumers want.

More evidence of competition in the U.S. is found in the reality that carriers cannot foreclose competition in upstream markets through exclusive contracts. For example, both Google and Palm chose to launch their most recent smart phones (the G1 and the Pre, respectively) exclusively on the two smallest of the national networks (T-Mobile and Sprint); they did not need to achieve carriage on Verizon or AT&T in order to achieve minimum efficient scale and compete effectively in the market. Thus, as noted above, the contention that handset manufacturers must “play ball” with the largest national wireless carriers is simply not true.<sup>20</sup> In fact, as the proliferation of post-iPhone handsets makes clear, device manufacturers appear to negotiate with carriers as aggressively as carriers negotiate with manufacturers.

Wireless competition extends beyond voice services to mobile data. For example, the FCC reports that 92 percent of Americans live in Census blocks with access to one or more mobile wireless broadband provider (*i.e.*, coverage by EVDO or HSDPA service); 72.5 percent have two or more providers available; and 50 percent have three or more providers.<sup>21</sup> These results are consistent with a study by CostQuest Associates, which found that – as of July 2008 – 87 percent of Americans live in zip codes served by two or more 3G networks and 68 percent live in zip codes served by three or more.<sup>22</sup> Moreover, none of these statistics reflect the large 3G build outs underway during 2008 and 2009 by AT&T and T-Mobile.

The evidence also demonstrates that entry into the mobile wireless market, including wireless data, as well as expansion by existing competitors, has occurred in the past and is likely to continue occurring in the future. Consider, for example, the 3G rollout strategy of T-Mobile. Until recently, in most major markets T-Mobile held significantly less spectrum than its larger competitors and was thus severely limited in its ability to offer 3G services. In 2006, however,

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WT Docket, *Thirteenth Report*, WT Docket 08-27 (*13<sup>th</sup> Annual CMRS Competition Report*) at ¶¶17-18.

<sup>20</sup> Importantly, the handset, applications and content markets are global in nature. Based on Merrill Lynch data, the global subscriber market shares of the four largest U.S. carriers are: Verizon, 1.9%; AT&T, 1.7%; Sprint, 1.0%; T-Mobile, 0.7%. *See also* Hahn, Litan and Singer at 17-21 for a useful discussion of the economics of foreclosure in the wireless sector.

<sup>21</sup> *13<sup>th</sup> Annual CMRS Competition Report* at ¶146.

<sup>22</sup> See CostQuest Associates, “U.S. 3G Mobile Wireless Broadband Competition Report” (July 14, 2009).

the firm bid \$4.2 billion for AWS licenses, thereby doubling the amount of spectrum it held in the top 100 markets<sup>23</sup> and securing the spectrum necessary to provide mobile data services.<sup>24</sup> In its subsequent report on wireless competition, the FCC commented on the success of T-Mobile and other non-ILEC-affiliated bidders, concluding that “these auction outcomes support the notion that spectrum allocation and assignment policies do not create an effective barrier to entry into the U.S. mobile telecommunications market.”<sup>25</sup>

*De novo* entry is also occurring. Most notable is Clearwire, a consortium comprised of Sprint Nextel, Google and Intel, as well as cable companies Comcast, Time Warner Cable and Bright House Networks. Clearwire is rolling out a national mobile broadband network that will compete directly with wireline broadband providers. The combined assets invested by all parties exceed \$14 billion.<sup>26</sup> Clearwire already operates wireless data networks in 47 U.S. cities, and is currently rolling out the first Wi-Max, 4G network in the U.S.

Cox Cable, the nation’s third largest cable carrier with over five million subscribers, is not a Clearwire investor. Instead, the firm is launching its own 3G wireless network in 2009.<sup>27</sup> Cox owns both AWS spectrum and 700 MHz spectrum licenses, for which it paid over \$300 million in the 700 MHz auction in 2007, and has other key assets as well. In a December 2008 interview, Cox Wireless Vice President Stephen Bye noted that the company also has substantial network assets that will support its entry:

We own some of our own towers that we lease to other cellular operators and we'll be taking advantage of those assets. We have very deep fiber networks. We have existing call centers in all our markets. And in addition to the voice network, we have a very extensive IP core data network and we'll be adding wireless to that as well. One of the biggest

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<sup>23</sup> *T-Mobile USA Secures Rights from FCC for AWS Spectrum*, Press Release (November 30, 2006) (available at [http://www.t-mobile.com/company/PressReleases\\_Article.aspx?assetName=Prs\\_Prs\\_20061130&title=TMobile%20USA%20Secures%20Rights%20from%20FCC%20for%20Auctioned%20Spectrum](http://www.t-mobile.com/company/PressReleases_Article.aspx?assetName=Prs_Prs_20061130&title=TMobile%20USA%20Secures%20Rights%20from%20FCC%20for%20Auctioned%20Spectrum)).

<sup>24</sup> See Federal Communications Commission, *Auction of Advanced Wireless Services Licenses Closes, Winning Bidders Announced for Auction No. 66, DA 06-1882* (September 20, 2006). (Auction results are available at [http://wireless.fcc.gov/auctions/66/charts/66press\\_3.pdf](http://wireless.fcc.gov/auctions/66/charts/66press_3.pdf).)

<sup>25</sup> See Federal Communications Commission, *In the Matter of Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993 Annual Report and Analysis of Competitive Market Conditions With Respect to Commercial Mobile Services*, WT Docket, *Twelfth Report*, 07-71, at ¶ 76.

<sup>26</sup> See Federal Communications Commission, *Sprint Nextel Corporation and Clearwire Corporation, Applications for Consent to Transfer Control of Licenses, Leases, and Authorizations*, WT Docket No. 08-94, File Nos. 0003462540 et al. *Memorandum Opinion and Order* (Nov. 7, 2008).

<sup>27</sup> See, e.g., Todd Spangler, “Dish, Cox Notch Spectrum Gains,” *Multichannel News* (March 23, 2008) (available at [http://www.multichannel.com/article/132528-Dish\\_Cox\\_Notch\\_Spectrum\\_Gains.php](http://www.multichannel.com/article/132528-Dish_Cox_Notch_Spectrum_Gains.php)).

challenges to a wireless carrier is the backhaul ... and we have very deep fiber networks to support our broadband and video business.<sup>28</sup>

The fact that both Clearwire and Cox are in the process of entering the wireless data market obviates the need for speculation about the significance of economies of scale, first mover advantages, the need to acquire spectrum, or other potential barriers to entry. The proposition that entry is economically feasible is demonstrated by the fact that it is actually occurring.

In addition to low concentration and the lack of effective barriers to entry, the market for wireless carriage also exhibits characteristics that make coordination among sellers – an essential element for an anticompetitive result, given the presence of multiple competitors – extremely unlikely.

The Department of Justice Merger Guidelines lists the following market characteristics that generally impede coordination: “firm heterogeneity,” “differences in vertical integration,” “product heterogeneity,” and “incomplete information” about rivals’ prospects resulting from “important differences in their business operations.”<sup>29</sup> All of these characteristics are present in the market for wireless carriage. Firms are distinguished by their geographic footprints, their level of vertical integration, and the technologies they use to provide carriage – differences that lead directly to deviations in business strategies. T-Mobile and Sprint – along with Leap and MetroPCS – for example, have both been more aggressive than AT&T and Verizon in promoting wireless substitution. These differences lead to heterogeneity in the products themselves: AT&T, for example, advertises that its (GSM-based) handsets work in more countries around the world, while Sprint advertises its “push to talk” technology, and Verizon emphasizes its Media-Flo driven V-Cast product. Such dramatic differences suggest that coordination among wireless carriers is extremely unlikely.

Perhaps the strongest indicator of robust competition among wireless carriers lies in their conduct. Contrary to the picture of a coordinated oligopoly painted by advocates of increased wireless regulation, the intense competition between wireless carriers on both price and service quality is self-evident to anyone exposed to the nearly \$4 billion the carriers spend each year on advertising, fifth most of any industry in the U.S.<sup>30</sup>

A recent analyst report, reacting skeptically to allegations of anticompetitive behavior by the wireless industry in a July 2009 letter by Senator Herb Kohl (D-WI), Chairman of the Subcommittee on Antitrust, Competition Policy, and Consumer Rights of the Senate Judiciary Committee, summarized the

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<sup>28</sup> See, “On the Hot Seat with Cox’s Stephen Bye,” *FierceWireless* (December 15, 2008) (available at [http://www.fiercewireless.com/story/hot-seat-coxs-stephen-bye/2008-12-15?utm\\_medium=rss&utm\\_source=rss&cmp-id=OTC-RSS-FW0](http://www.fiercewireless.com/story/hot-seat-coxs-stephen-bye/2008-12-15?utm_medium=rss&utm_source=rss&cmp-id=OTC-RSS-FW0)).

<sup>29</sup> *Guidelines* at §2.11.

<sup>30</sup> Nielsen Media provides data on advertising expenditure by industry. See <http://www.nielsenmedia.com/nc/portal/site/Public/menuitem.55dc65b4a7d5adff3f65936147a062a0/?vgnextoid=3a6bfdbd3d09a110VgnVCM100000ac0a260aRCRD>.

competitive developments in the days immediately before the senator's letter was sent:

Just days before [Senator Herb Kohl's letter], Tracfone dropped the hammer on prices in the pre-paid voice and text market, announcing a new super-low price for unlimited wireless service (with a service they advertise as "*powered by Verizon's network*," and with Verizon's logo on the box no less). Since Verizon introduced its nationwide *Unlimited Anytime* voice and data plan on February 19<sup>th</sup> of last year, all-you-can-eat plans have dropped by as much as 55%. The day before Tracfone's announcement, Comcast – as a reseller of Clearwire's 4G data service – kicked the chair out from under wireless *data* prices with a pricing plan that puts unlimited 4G data at just \$7 per month for the first year. The "going rate" is \$45. Then the *coup de grace* came a day later, when Sprint dispensed with the entire slippery slope of rising netbook subsidies by fast-forwarding right to the ugly end-game. Why undercut AT&T's and Verizon's \$199 price point for the Compaq Mini 110c-1040DX by only, say, \$50 or even \$100 when simply cutting it to free from the get-go (\$0.99, actually) dispenses with the whole tedious race to the bottom? *That's an anti-competitive industry?*<sup>31</sup>

Ironically, the much-criticized example of AT&T's exclusive offering of the iPhone is perhaps the most compelling example of competition among carriers. Prompted by the success of the iPhone, other carriers raced to release handsets with comparable features – including the ability to download applications from independent providers. That competition led directly to the release of the Blackberry Storm (by Verizon), the Google G1 (by T-Mobile) and, most recently, the Palm Pre (by Sprint). Such competitive conduct is simply not consistent with the coordinated oligopoly model posited by advocates of increased wireless regulation. Moreover, if the iPhone were universally available by regulatory mandate, would carriers have had the incentive to push for the entry of competing devices (each with its own set of useful attributes), which have dramatically lowered the price of the iPhone and accelerated the rate of innovation of handsets in general?

Nor is competition limited to the devices network operators make available; competition is also about network coverage, speed and reliability, as evidenced by advertisements claiming the "most bars in most places," "most reliable network" or the "largest network."<sup>32</sup> As discussed further below, both large and small network operators seek to distinguish their services by advertising superior handsets, faster networks, larger coverage areas, fewer dropped calls, and other attributes valued by consumers.

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<sup>31</sup> Craig Moffett, *Weekend Media Blast: Tilt*, Bernstein Research (July 10, 2009) at 1 (emphasis in original).

<sup>32</sup> The availability and quality of data networks is also a key differentiator. *See, e.g.*, "The NPD Group: Despite Recession, U.S. Smartphone Market is Growing" (Press Release, March 3, 2009) ("As the AT&T 3G network construction continues, and T-Mobile's begins, high-speed data is becoming more central to smartphones. In fact, two-thirds (66 percent) of smartphones now use 3G networks, compared to just 46 percent a year ago.") (available at [http://www.npd.com/press/releases/press\\_090303.html](http://www.npd.com/press/releases/press_090303.html)).

### B. Upstream Markets are Competitive

Even if market power did exist in the market for carriage, it would not be sufficient to justify the wide range of regulations proposed by some regulation advocates. As we explain further below, many of the types of conduct that would be precluded by the proposed rules, such prohibitions against discrimination with respect to content and applications, cannot be explained by market power in the carriage market alone; rather, they only make sense (as anticompetitive acts) if actual or potential market power exists in the *upstream* markets.

For example, assume (counterfactually, in our view) that Verizon's agreement to make Microsoft the default search engine on its mobile phones<sup>33</sup> represents an effort to foreclose competition in the search engine market – *i.e.*, to use the market power of the carrier (Verizon) to lead consumers to a particular search engine (Microsoft) by limiting their options. Why would Verizon do such a thing? First, Verizon has no independent interest in foreclosing upstream competition; to the contrary, it has an interest in having the most competitive markets possible for inputs to its wireless service. Second, even if Microsoft could secure Verizon's agreement to exclude its competitors, such an agreement would only be anticompetitive if there was a reasonable prospect for Microsoft to succeed in its quest for market power – the probability of which, given Google's continuing dominance, seems quite remote.

Wireless devices, applications and content are differentiated products, and the textbook model of “perfect competition” therefore does not apply. Product differentiation, however, should not be mistaken for market power. In fact, the wireless marketplace is intensely competitive at every level. For example:

- CTIA reports there are 33 handset manufacturers in the U.S. market for mobile devices, including Motorola, LG, Samsung, Nokia, Palm, Research in Motion and, of course, Apple.<sup>34</sup> The market leader, Motorola, has a market share of 21 percent.<sup>35</sup> Moreover, there is extensive product diversity in the device market, including, for example, multiple operating systems from Blackberry, Google, Palm, and Microsoft, among others.
- The markets for mobile content and applications are intensely competitive, with literally tens of thousands of competitors. While no one knows precisely how many companies (and individuals) are developing applications for mobile devices such as Blackberries, the iPhone and the G1, Apple reports

<sup>33</sup> See, *e.g.*, Microsoft, “Verizon Wireless Selects Microsoft for Mobile Search and Advertising,” (Press Release, January 7, 2009) (available at <http://www.microsoft.com/Presspass/press/2009/jan09/01-07VerizonSearchPR.msp>). Verizon and Google sought to negotiate a similar agreement, but ultimately were unable to come to terms. See *e.g.*, Spencer E. Ante, “In Search of a Google-Verizon Search Deal,” *Business Week* (October 31, 2007) (available at [http://www.businessweek.com/technology/content/oct2007/tc20071031\\_512151.htm](http://www.businessweek.com/technology/content/oct2007/tc20071031_512151.htm)).

<sup>34</sup> CTIA, *Written Ex Parte Communication*, RM-11361; GN Docket No. 09-51; WC Docket No. 07-52 (May 12, 2009) (*CTIA Ex Parte Submission*) at 2.

<sup>35</sup> See, *e.g.*, Sarah Reedy, “Mobile Handset Market Shuffling,” *Telephony Online* (December 22, 2008) (available at <http://news.vzw.com/news/2009/01/pr2009-01-05.html>).

there were more than 100,000 downloads of its software development kit (SDK) in the four days after it was released in March 2008.<sup>36</sup> That same month, Verizon held the first conference for its Open Development Initiative, and 600 firms sent representatives. More recently, Apple reports that there are “more than 100,000 developers in the iPhone™ Developer Program” for its App Store.<sup>37</sup>

While not all content and applications developers are small firms, even the largest firms face competition. For example, on July 15, 2009, Google released a beta version of software designed to make its Google Voice service (which competes with traditional voice service and alternative services such as Skype) easier to use on mobile phones.<sup>38</sup> As we discuss further below, soon thereafter, Apple chose to reject (at least temporarily) Google’s attempt to offer its Google Voice application from the iPhone Apps Store, leading to an investigation by the FCC.

Advocates for increased wireless regulation have for the most part ignored upstream markets in their arguments,<sup>39</sup> despite the fact that market power or the potential for market power in those markets is a necessary condition for the much of the conduct they seek to be harmful to consumers. As the evidence above demonstrates, even a cursory review of those markets indicates they are extremely competitive, and that there is no evidence that foreclosure has occurred in the past or that it is likely to be successful in the future.<sup>40</sup>

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<sup>36</sup> *Exemption to Prohibition on Circumvention of Copyright Protection Systems for Access Control Technologies*, Docket No. RM 2008-8, Responsive Comment of Apple Inc. in Opposition to Proposed Exemption 5A and 11A (Class #1), U.S. Copyright Office, Library of Congress. (*Apple Copyright Office Brief*) at 4.

<sup>37</sup> See, e.g., Apple, “Apple’s App Store Downloads Top 1.5 Billion in First Year” (Press Release, July 14, 2009) (available at <http://www.apple.com/pr/library/2009/07/14apps.html>); See also *Apple Copyright Office Brief* at 5.

<sup>38</sup> See, e.g., Miguel Helft, “Google Voice Goes Mobile,” *The New York Times* (July 15, 2009) (available at <http://bits.blogs.nytimes.com/2009/07/15/google-voice-goes-mobile/>); “Google Voice Releases Skype Rival For BlackBerry, Android Phones,” *MocoNews.Net* (available at <http://moconews.net/article/419-google-voice-releases-skype-rival-for-blackberry-android-phones/>).

<sup>39</sup> Wu, for example, focuses on “the impact of carrier practices on the vertical markets touched by the wireless industry and its spectrum-based oligopoly – in other words, the effects of the wireless oligopoly on the equipment and application markets, and consequently on consumers,” not on market power in the upstream markets themselves. See Wu at 6.

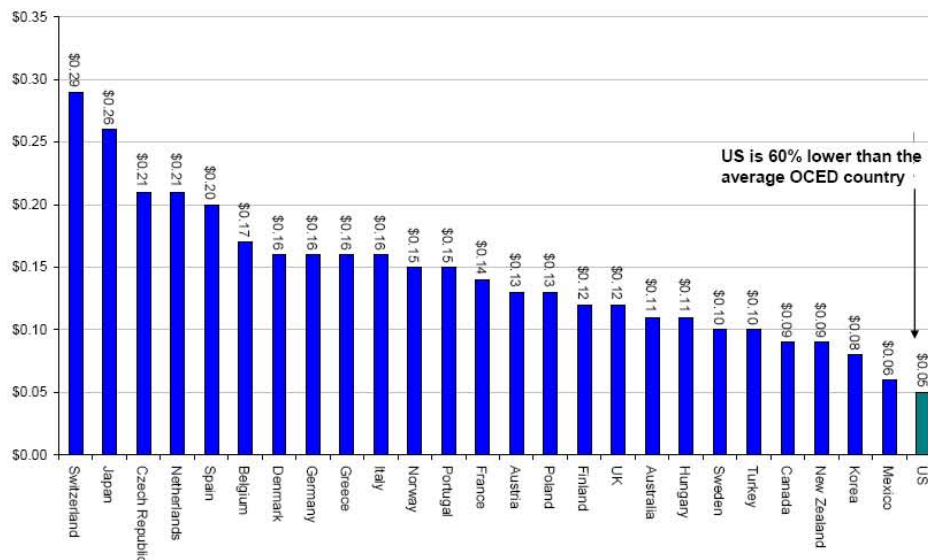
<sup>40</sup> Christopher Yoo makes a similar point with respect to the wireline market. See Christopher S. Yoo, “Beyond Network Neutrality,” 19 *Harvard Journal of Law and Technology* 19;1 (Fall 2005) 1-77, at 8 (“In the broadband industry, the level of production that is the most concentrated and protected by barriers to entry is the last mile. This implies that decisions about Internet regulation should be guided by their impact on competition in that portion of the industry. Rather than adopt this orientation, network neutrality advocates direct their attention to preserving and promoting competition among providers of content and applications, which is the level of production that is already the most competitive and the most likely to remain that way.”)

### C. Market Performance Indicates the Relevant Markets are Competitive

If there was significant market power in the markets for mobile wireless carriage, devices, content and applications, one would expect to see evidence of that market power in market performance. In general, markets characterized by high levels of market power exhibit higher prices, lower levels of output, and slower innovation than more-competitive markets. In the case of mobile wireless, all of the metrics point in the opposite direction: The U.S. market exhibits low and falling prices, high levels of output, and rapid innovation, both in absolute terms and relative to other developed nations.

First, as shown in Figure One, the United States has the lowest wireless prices in the developed world, at \$0.05 per minute of use, according to a fourth quarter 2008 survey by Merrill Lynch.<sup>41</sup>

**FIGURE ONE:  
REVENUE PER MINUTE OF USE, OECD COUNTRIES, FOURTH QUARTER 2008**



Source: Merrill Lynch

The Merrill Lynch data are consistent with the latest FCC data, which show average revenue per minute declining to \$0.05, down from \$0.44 only 14 years earlier.<sup>42</sup>

Data prices have also fallen dramatically. When Verizon (followed immediately by Sprint) offered a combined voice and data package for \$100 per month in 2008, it caused a minor stir in the industry; within a year, the price had been cut by half. As one analyst observed: “A year ago, the benchmark price for unlimited voice and data plans was \$100 per month. A year later, it is \$50.”<sup>43</sup> More recently, Tracfone Wireless announced a \$45 pre-paid flat-rate calling

<sup>41</sup> Merrill Lynch, “Global Wireless Matrix 4Q08.”

<sup>42</sup> See 13<sup>th</sup> Annual CMRS Competition Report at Table 12.

<sup>43</sup> “U.S. Wireless: Pre-Paid Pricing ... Fifty is the New One Hundred.” Bernstein Research, April 14, 2009.



plan.<sup>44</sup> One analyst reacted to these price reductions by concluding that the price actions from TracPhone and others demonstrate “there are just too many competitors in the U.S. Wireless business.”<sup>45</sup>

The growth in use of pre-paid plans is also having a significant effect on prices. A recent Morgan Stanley report concluded that “Unlimited carriers like Leap, MetroPCS, and Sprint’s Boost are providing stiff competition for the traditional prepaid offerings,”<sup>46</sup> and that, as a result,

Voice ARPU has been facing ongoing pressure, down 4% Y/Y as the incremental minute becomes increasingly free. Large bucket plans, free nights and weekends and family plans helped to first commoditize voice and drive voice ARPU down. Now voice ARPU is facing intense competitive pressure from cheaper bucket plans and new entrants such as value oriented unlimited carriers.<sup>47</sup>

The same report found that “text messaging is displacing would-be voice minutes to text messages, making large bucket plans even less desirable.”<sup>48</sup>

Falling prices have led to increased output, in the form of both higher penetration and greater intensity of use. From the late 1980s until the year 2000, subscribership grew by over two orders of magnitude, from under one million in 1986 to over 100 million less than a decade and a half later. In the next half-decade, subscribership doubled again, to over 200 million by 2005.<sup>49</sup> In the last few years, another 70 million subscribers have been added to reach today’s estimate of 270 million subscribers.<sup>50</sup>

Low prices have also led to high levels of usage. According to Merrill Lynch, the average U.S. mobile subscriber uses over 829 minutes of “talk time” per month, almost twice as much usage as any of the other 26 OECD countries in the survey, none of which averaged more than 450 minutes per month.<sup>51</sup>

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<sup>44</sup> Roger Cheng, “Update: New Low Wireless Rate Reignites Fear Over Price War,” *Dow Jones Newswires* (July 2, 2009)(available at <http://www.nasdaq.com/aspx/stock-market-news-story.aspx?storyid=200907021342dowjonesdjonline000713&title=new-low-wireless-rate-re-ignites-fear-over-pricing-power>).

<sup>45</sup> See Moffett (July 2009) at 3.

<sup>46</sup> Simon Flannery *et al*, *Telecom Services: 1Q Trend Tracker*, Morgan Stanley (June 5, 2009) at 54.

<sup>47</sup> Flannery *et al* at 65.

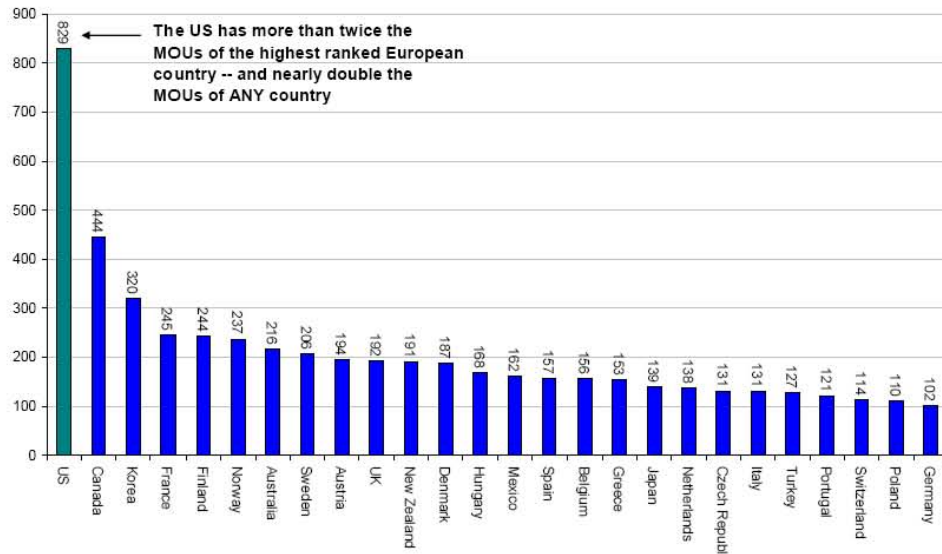
<sup>48</sup> Flannery *et al* at 65.

<sup>49</sup> See 13<sup>th</sup> *Annual CMRS Competition Report* at Table A-1.

<sup>50</sup> CTIA, “Wireless Quick Facts” (available at <http://www.ctia.org/advocacy/research/index.cfm/AID/10323>).

<sup>51</sup> Merrill Lynch, “Global Wireless Matrix 4Q08.”

**FIGURE TWO:  
AVERAGE MINUTES OF USE, OECD COUNTRIES, FOURTH QUARTER 2008**

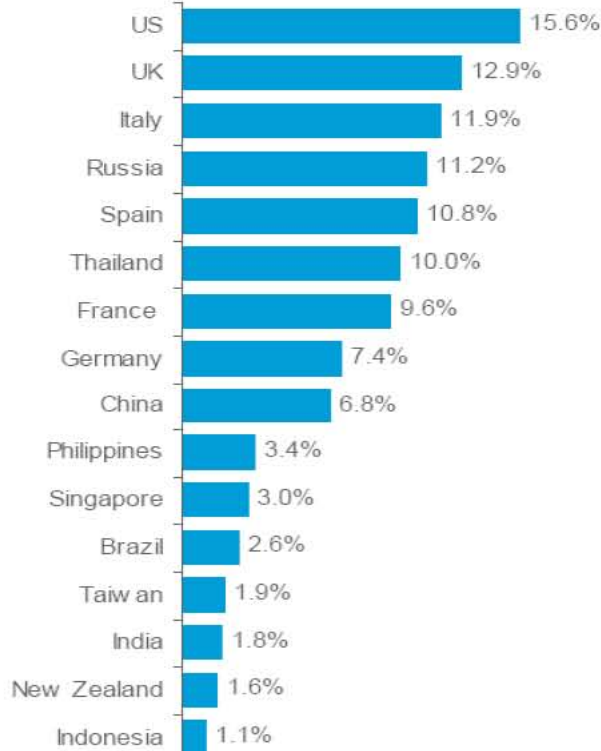


Source: Merrill Lynch

The U.S. is also outpacing other developed countries with respect to mobile data. As EU Commissioner Viviane Reding admitted in a 2008 speech, “growth has been faster in the U.S., particularly in mobile services [which are] growing more than three times faster in the USA than in Europe. Despite our widely applauded leadership in rolling out the 2nd Generation services we seem to be lagging behind on moving to the mobile web.”<sup>52</sup> Confirming Commissioner Reding’s conclusions, in July 2008 Nielsen released data showing the U.S. comfortably in first place among surveyed countries in mobile Internet penetration.

<sup>52</sup> Viviane Reding, “Europe on the Way to a High Speed Internet Economy” (May 8, 2008) at 4.

**FIGURE THREE:**  
**MOBILE INTERNET PENETRATION IN 16 COUNTRIES (Q1 2008)**



Source: Nielsen Mobile, *Critical Mass: The Worldwide State of the Mobile Web* (July 2008)

On the metrics that seem to be of greatest concern to regulation advocates – choice and innovation – the data also show the industry is performing well. For example, CTIA reports there are more than 630 different wireless handsets and devices available in the U.S., compared with only 147 in the United Kingdom, and notes that many of the most advanced handsets introduced in recent months have been launched in the U.S., including (among others) the iPhone 3G, the Google G1, and the BlackBerry Storm.<sup>53</sup> Amazon’s highly popular Kindle was also launched in the U.S. with connectivity provided by Sprint – while its European launch was delayed for a full year by Amazon’s inability to reach agreement with a mobile carrier there.<sup>54</sup>

As noted above, the number and variety of available applications is increasing rapidly: In addition to the Apple Apps Store, application downloads are now available from the Android Market (Google), the Palm Software Store, BlackBerry App World and the Nokia Ovi Store, offering a total of more than 60,000 different applications. On July 14, 2009 Apple announced that more than 1.5 billion applications had been downloaded from its iPhone App Store since its launch in July 2008.

<sup>53</sup> CTIA *Ex Parte Submission*, at 11.

<sup>54</sup> See Bill Ray, “UK to Get Kindle in Christmas Stocking?” *The Register* (July 16, 2009) (available at [http://www.theregister.co.uk/2009/07/16/uk\\_kindle/](http://www.theregister.co.uk/2009/07/16/uk_kindle/)).

One notable aspect of wireless market innovation is the extent to which it has rapidly mooted many of complaints by regulation advocates to the lack of choice in wireless products. For example, one of the specific complaints leveled by Skype in its 2007 petition was that carriers were disabling Wi-Fi functionality on the U.S. versions of cell phones in order to prevent customers from using the Skype service over their Wi-Fi connections. Today, however, CTIA reports there are at least 29 Wi-Fi enabled handsets available in the U.S. Skype itself offers both a service for Wi-Fi enabled handsets as well as Skype Lite for handsets that are not Wi-Fi or 3G capable.<sup>55</sup>

Similarly, complaints about the unwillingness of cell phone carriers to “unlock” their phones so they can be used on other networks are, at most, overstated. To unlock a G1 from T-Mobile, for example, one need only (a) obtain a valid SIM card from a competing network (such as AT&T), (b) call T-Mobile and ask for an unlocking code and (c) click on [www.youtube.com/watch?v=3lsHs4MnL5w](http://www.youtube.com/watch?v=3lsHs4MnL5w) for video instructions on precisely how to enter the unlocking code, switch SIM cards, and complete the switchover to the new network – a process which takes less than five minutes. As CTIA notes in a recent filing, “Many of the nation’s largest carriers voluntarily unlock phones when asked to do so by a bona fide customer,” and “Verizon Wireless does not use locks on any of its post-paid phones.”<sup>56</sup>

The same is true for many of the “missing applications” that advocates of increased wireless regulation have bemoaned. For example, in his 2007 paper, Professor Wu complained that “the technical possibilities of geo-location are highly underutilized,” that it should be possible and cheap to track pets using mobile wireless and GPS technology, and that wireless communications should be built into e-Books and refrigerators.<sup>57</sup> As of July 2009, the iPhone Apps Store offered 2,800 location-aware applications, and application-aware apps were also available from the Android Marketplace (over 400), Blackberry App World (79), the Nokia Ovi Store (23) and the Palm App Catalog (9), most for \$0.99;<sup>58</sup> a Google search for on “GPS Pet Tracking” identifies a wide choice of mobile wireless/GPS-based pet tracking devices;<sup>59</sup> and, Amazon.com has sold an estimated one million Kindle e-Books, which download content over the Sprint 3G network.<sup>60</sup> Wireless refrigerators, it must be admitted, are still only a futurist’s dream.

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<sup>55</sup> CTIA, “The United States and World Wireless Markets: Competition and Innovation are Driving Wireless Value in the U.S.” (May 2009).

<sup>56</sup> *Exemption to Prohibition on Circumvention of Copyright Protection Systems for Access Control Technologies*, Docket No. RM 2008-8, U.S. Copyright Office, Library of Congress, Comments of CTIA (February 2, 2009) (*CTIA Copyright Office Filing*) at 38. To the extent carriers continue to lock their phones, they do so in order to support their continued ability to subsidize handset prices, as discussed further below.

<sup>57</sup> See Wu at 31.

<sup>58</sup> See *Location Aware App Report: Review of Location-Aware Apps from the Apple, Blackberry, Android, Nokia and Palm App Stores*, Skyhook Wireless (July 2009).

<sup>59</sup> See, e.g., [www.dogtracs.com/product.asp](http://www.dogtracs.com/product.asp), a service which uses the T-Mobile network to provide real-time tracking data for wandering canines.

<sup>60</sup> See Craig Moffett, *U.S. Wireless: Boost-ed...Is the Pre-Paid Subscriber Boom for Real?* Bernstein Research (May 11, 2009) at 13. Neither Amazon nor Sprint release precise sales figures for the Kindle.

In summary, the performance of the U.S. wireless industry is consistent with the low level of industry concentration and high degree of rivalrous conduct described above. All of these factors, the traditional metrics by which competition in an industry is evaluated, show that all levels of the wireless industry, from carriage through content, are, broadly speaking, highly competitive. This is not to say that market power could *never* exist in these markets, or that an inquiry into a specific, potentially anticompetitive practice could never be justified. It does demonstrate, however, that there is no basis for a blanket presumption that market power exists, that the practices that concern regulation advocates are anticompetitive, or that a blanket prohibition on such practices would improve consumer welfare.

### III. PROPOSALS TO REGULATE WIRELESS COMMUNICATIONS

Proposals to further regulate the wireless industry potentially would prohibit a wide range of business practices while imposing new regulatory mandates and involving the FCC heavily in technological standard setting and product design. The depth and breadth of the proposed changes are often masked, however, by the fact that various regulation advocates focus on different aspects of wireless industry conduct.

According to Skype, for example, the main goal of regulation should be to prohibit handset manufacturers and wireless carriers from selling handsets that make it difficult for consumers to use the Skype Voice-over-IP (VoIP) telephone service. The Rural Cellular Association (RCA), which represents small cellular companies, proposes to ban larger competitors from entering into exclusive contracts with manufacturers to distribute innovative handsets. Other regulation advocates, including academics and interest groups, would impose “net neutrality” regulation on the wireless industry, a step which, as we explain below, potentially could prohibit virtually all types of exclusive or differentiating conduct, beyond what is required for basic functionality, at every level of the industry.

In this section, we review several recent proposals for additional regulations in the wireless industry and describe what they would mean, in practice, if adopted. We begin by describing three relatively targeted proposals: (1) the Rural Carrier Association’s plea for a prohibition on handset exclusivity; (2) Skype’s petition arguing that the FCC should impose “wireless *Carterphone*” rules to allow any device or application to be attached to wireless networks; and, (3) the Electronic Frontier Foundation’s (EFF’s) proposal to legalize circumvention of technical protection measures on mobile devices (and hence permit “jailbreaking”). Next, we discuss proposals by groups like Free Press and the New America Foundation to apply to the wireless industry a broad set of anti-discrimination rules generally referred to as “net neutrality.” Finally, we explain what this broader regulatory regime would mean in practice – that is, we attempt to answer the question, “if these rules were adopted, who would be prohibited from doing what?”

### A. *The Rural Cellular Association (RCA) and Handset Exclusivity*

In May 2008, the RCA petitioned the Commission to “initiate a rulemaking to investigate the widespread use and anticompetitive effects of exclusivity arrangements between commercial wireless carriers and handset manufacturers and, as necessary, adopt rules that prohibit such arrangements when contrary to the public interest.”<sup>61</sup> The *RCA Petition* argues that these arrangements give large carriers a competitive advantage over small ones. While much of the *RCA Petition* is focused on Apple’s exclusivity agreement with AT&T for distribution of the iPhone, the petition itself challenges all exclusivity agreements, including (for example) agreements between LG and Verizon, and between Samsung and Sprint-Nextel.<sup>62</sup>

Subsequent events have placed the *RCA Petition* front and center in the policy debate. In June 2009, then FCC Chairman-designate Julius Genachowski indicated to the Senate Commerce Committee his intention, if confirmed, to “ensure that the full record on the [*RCA Petition*] is reviewed, and act accordingly to promote competition and consumer choice.”<sup>63</sup> The issue was further highlighted when Senator Herbert Kohl asked both the Department of Justice (DOJ) and the FCC to investigate handset exclusivity, which he asserted “is a serious barrier to competition,” and to “take action to prevent the dominant cellphone providers from gaining exclusive access to the most in-demand cell phones.”<sup>64</sup> Concurrently, the press reported that the Department of Justice planned to investigate monopolistic conduct in the telecommunications sector, including specifically the effect of handset exclusivity agreements.<sup>65</sup>

While proposals for handset exclusivity are typically phrased as prohibitions on wireless carriers, the evidence suggests that exclusivity agreements are often sought out by manufacturers rather than carriers, and that any ban on such arrangements would, to be effective, have to apply symmetrically to both parties, even though the handset market is universally regarded as being competitive.<sup>66</sup>

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<sup>61</sup> Rural Cellular Association, *Petition for Rulemaking Regarding Exclusivity Arrangements Between Commercial Wireless Carriers and Handset Manufacturers* (May 20, 2008) at 1 (*RCA Petition*).

<sup>62</sup> *RCA Petition* at ii.

<sup>63</sup> Amy Schatz, “FCC to Review Exclusive Deals That Lock Up Hot Cellphones,” *The Wall Street Journal* (June 19, 2009) (available at <http://online.wsj.com/article/SB124535799230328853.html>).

<sup>64</sup> Letter from Senator Herb Kohl to Christine Varney and Julius Genachowski (July 6, 2009) at 3 (available at <http://entropyeconomics.com/wp-content/uploads/2009/07/kohl-letter-cell-phones-fcc-7609.pdf>).

<sup>65</sup> Amol Sharma, “Telecoms Face Antitrust Threat,” *The Wall Street Journal* (July 7, 2009) (available at <http://online.wsj.com/article/SB124689740762401297.html>).

<sup>66</sup> An asymmetric ban would in any case be impractical, as it would require the FCC to distinguish between exclusivity agreements “imposed” by carriers and those “imposed” by manufacturers, when in fact such agreements are the outcome of a bargaining process where the motivations of the negotiating parties are likely to be difficult if not impossible to ascertain.

B. “Wireless Carterphone” and the Skype Petition

Prior to Chairman Genachowski’s September 2009 speech, the most prominent call for regulatory intervention in the wireless market was the 2007 petition filed with the FCC by Skype S.A.R.L. (Skype), claiming that wireless carriers were disabling cell phone functionality “in an effort to prefer their own affiliated services and exclude rivals.”<sup>67</sup> The *Skype Petition* asks the FCC to establish a regulatory regime to ensure “that subscribers have the right to attach non-harmful devices to their wireless networks and run applications of their choosing.”<sup>68</sup> The logic of the *Skype Petition* flows directly from the work by Timothy Wu,<sup>69</sup> cited at the beginning of this paper, which recommended applying the “Carterphone principle” to wireless networks.

*Carterphone* refers to the FCC’s 1968 decision to alter the portions of AT&T’s then-existing tariff prohibiting “foreign attachments” from being connected to the public switched telephone network, thereby allowing consumers to connect their own handsets and other equipment. The *Skype Petition* relies heavily on *Carterphone*, as well as on the earlier *Hush-A-Phone* case and on the FCC’s 1992 decision permitting (but conditioning) the bundling of consumer premises equipment (such as handsets) by cell phone carriers. To understand the *Skype Petition*, it is important to place these prior decisions in their historical and economic context.

In the *Hush-a-Phone* decision (1956), the FCC denied a petition by Hush-a-Phone Corporation to force AT&T to cease and desist from interfering with Hush-a-Phone’s efforts to sell a cup-like device users could place over the telephone receiver to create a quieter conversation. AT&T claimed the Hush-a-Phone violated prohibitions on the use of “foreign devices” (*i.e.*, devices not furnished by the telephone company) contained in its FCC-approved tariff. The FCC, in denying Hush-a-Phone’s petition, agreed with AT&T that the device “impaired” the functioning of the telephone network, since it resulted in a lower and distorted sound for the party on the other end of the call. Hush-a-Phone successfully appealed to the DC Court of Appeals. Noting that customers could achieve the same effect by placing their hands over the mouthpiece, the Court concluded that

To say that a telephone subscriber may produce the result in question by cupping his hand and speaking into it, but may not do so by using a device which leaves his hand free to write or do whatever else he wishes, is neither just nor reasonable. [AT&T’s] tariffs, under the Commission’s decision, are an unwarranted interference with the telephone subscriber’s right reasonably to use his telephone in ways which are privately beneficial without being publicly detrimental.<sup>70</sup>

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<sup>67</sup> See *Skype Petition* at i.

<sup>68</sup> *Skype Petition* at 25.

<sup>69</sup> Tim Wu, *supra* note 6.

<sup>70</sup> *Hush-a-Phone Corp. v. U.S.*, 15 P.U.R.3d 467, 238 F.2d 266, 99 U.S. App. D.C. 190 (1956).

A dozen years later, in 1968, AT&T again sought to prohibit the use of a foreign attachment. The device in this case, the Carterfone, allowed an operator at the base station of a two-way radio to connect to the public switched telephone network by placing the telephone handset in a cradle, thus allowing the caller at the other end of the two-way radio to communicate over the regular telephone system. Citing the D.C. Circuit Court's decision in *Hush-A-Phone*, the FCC decided that consumers were entitled to attach devices to the wireline network so long as they did not harm that network.<sup>71</sup> Its order found that a tariff completely prohibiting any "equipment, apparatus, circuit or device not furnished by the telephone company" was overly broad. As the FCC explained, "[t]he vice of the present tariff, here as in *Hush-A-Phone*, is that it prohibits the use of harmless as well as harmful devices."<sup>72</sup>

In 1980, the FCC took up the issue of customer premise equipment (CPE) again, this time in the context of whether AT&T and the other monopoly telephone companies were permitted to bundle CPE with their regulated service offerings.<sup>73</sup> The Commission removed its tariff requirements for both CPE and data transmission (*i.e.*, non-voice communication), and also required that CPE and data transmission be "unbundled" from the telephone companies' regulated services. The Commission noted that this decision was consistent with the *Hush-A-Phone* and *Carterfone* decisions as well as the consumer rights established under Section 201(b) of the Act. A year later, the Commission applied the same principle to mobile equipment, requiring that, as a new service, it be both unbundled and untariffed.<sup>74</sup>

The effect of these decisions, at least in the wireline market, was to give consumers choice and spur innovation in the market for CPE, including new devices such as fax machines and computer modems as well as telephone handsets. The primary reason for these benefits was that *Hush-a-Phone* and its progeny separated the CPE market from the AT&T monopoly, thus preventing AT&T from earning monopoly profits on CPE and – probably more important – subjecting the market to competitive incentives for innovation.<sup>75</sup> The unchallenged fact of AT&T's monopoly power was an essential element not only of the policy, but of its results.

In the wireless market, on the other hand, competition prevailed from the outset, though initially the FCC limited analog wireless service to two licensees

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<sup>71</sup> *Use of the Carterfone Device in Message Toll Telephone Service*, 13 FCC 2d 420 (1968).

<sup>72</sup> *Id.* at 424.

<sup>73</sup> *Amendment of Section 64.702 of the Commission's Rules and Regulations (Second Computer Inquiry)*, Final Decision, 77 FCC 2d 384; modified on recon., 84 FCC 2d 50 (1980); further modified 88 FCC 2d 512 (1981), aff'd sub nom., *Computer and Communications Industry Ass'n v. FCC*, 693 F. 2d 198 (D.C.Cir. 1982), cert. denied, 461 U.S. 938 (1983), aff'd on second further recon., FCC 84-190, (released May 4, 1984).

<sup>74</sup> *Cellular Communications Systems*, 86 FCC 2d 469, 497 (1981) modified, 89 FCC 2d (Reconsideration Order), further modified, 90 FCC 2d 571 (1982) (Further Reconsideration Order) appeal dismissed sub nom. *U.S. v. FCC*, No. 82-1526 (D.C. Cir. March 3, 1983).

<sup>75</sup> See, e.g., Peter Huber, *Law and Disorder in Cyberspace: Abolish the FCC and Let Common Law Rule the Telecom* (Oxford: Oxford University Press, 1997) at 78-9.



in each market. In 1992, as it opened the market up to multiple competitors (through the allocation of spectrum for Personal Communications Services (PCS)), the Commission reversed its position on the bundling of wireless equipment in a decision known as the *Cellular CPE Bundling Order*,<sup>76</sup> which allowed wireless carriers to bundle cellular service and equipment. The Commission found that the equipment market was competitive, and that while the downstream market for cellular services was not fully competitive,<sup>77</sup> carriers did not possess market power in the upstream market for handsets. Citing comments by the Department of Justice and others that bundling is an efficient promotional device that can lower barriers to consumers,<sup>78</sup> the FCC concluded that “modifying the bundling policy is in the public interest because the public interest benefits of bundling in the cellular market outweigh the potential for competitive harm.”<sup>79</sup> Accordingly, the Commission allowed carriers to bundle handsets with service, provided that “cellular service is also offered separately on a nondiscriminatory basis.”<sup>80</sup>

The *Cellular CPE Bundling Order* is particularly significant in two respects: First, it required carriers to offer cellular service on a non-discriminatory “bring your own handset” basis – a requirement that remains in place today. Second, and importantly, it recognized that the central issue with respect to the bundling of handsets with service was not downstream market power (power to raise prices to consumers), but rather upstream market power (the power to discriminate against handset manufacturers).

Like the *Cellular CPE Bundling Order*, the *Skype Petition* acknowledges the centrality to the analysis of upstream (exclusionary) market power rather than downstream market power. It differs, however, on the question of whether carriers have such power, arguing that “[C]arriers are using their *considerable influence over handset design* and usage to maintain an inextricable tying of applications to their transmission networks and are limiting subscribers’ rights to run applications of their choosing”<sup>81</sup> and, as noted above, that “[t]he simple truth is that manufacturers depend upon carriers to market their devices, and no manufacturer can afford not to ‘play ball’ with the largest wireless carriers.”<sup>82</sup>

Ultimately, the *Skype Petition* points to three classes of allegedly anticompetitive behavior. First, at the device layer, Skype claims that wireless carriers disable features that consumers want, such as Wi-Fi connectivity. For

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<sup>76</sup> Federal Communications Commission, *In the Matter of Bundling of Cellular Customer Premises Equipment and Cellular Service, Report and Order*, CC Docket No. 91-34, (1992) (*Cellular CPE Bundling Order*).

<sup>77</sup> *Id.* at ¶11. At that time, Commission rules prohibited more than two facilities-based providers in a given market. Significantly, the following year Congress allowed auctions of spectrum licenses and started a trend that would include the emergence of Personal Communications Service (PCS) and a significant increase in investment and competition in the mobile telephony market. See Omnibus Budget Reconciliation Act of 1993, Pub. L. No. 103-66, § 6002, 107 Stat. 312, 392 (1993).

<sup>78</sup> *Id.* at ¶19.

<sup>79</sup> *Id.* at ¶7.

<sup>80</sup> *Id.* at ¶7.

<sup>81</sup> *Skype Petition* at 2 (emphasis added).

<sup>82</sup> *Id.* at 22.

example, its petition points to the Nokia E62, a smartphone that has been marketed in the U.S. without Wi-Fi, while a similar Nokia phone, the E61, has been marketed in Europe with a Wi-Fi feature.<sup>83</sup>

Second, Skype argues that carriers engage in handset locking, which prevents consumers from switching carriers. Skype admits that U.S. carriers often will provide unlocking codes for their phones, but argues that consumers typically are not aware of this option.<sup>84</sup>

Third, at the application layer, Skype claims that wireless carriers fail to provide open development platforms, and that they impose consumer terms of service that limit consumers' ability to use innovative applications and services (like Skype) that are not provided by the carriers.<sup>85</sup>

Skype's proposed remedy is that the Commission "should issue a declaratory ruling stating that the *Carterfone* right to attach fully-capable, non-harmful devices applies to all services offered by wireless carriers."<sup>86</sup> Skype further asks that the Commission initiate a proceeding to determine whether the practices of wireless carriers are consistent with *Carterfone* and the 1992 *Cellular CPE Bundling Order*.<sup>87</sup> Most ambitiously, Skype asks that the Commission initiate a standard setting process designed to "create technical standards that protect the *Carterfone* principle with respect to the market for applications that run on 3G Internet access networks."<sup>88</sup>

### C. Proposals to Allow Circumvention of Technical Protection Measures

While the FCC is the primary focal point of proposals to intervene in the wireless market, it is not the only one. Recently, for example, claims of discriminatory practices were introduced into a Copyright Office proceeding regarding the permissibility of circumventing technological protection measures contained in cell phone operating systems that restrict users' ability to install certain applications.<sup>89</sup> In contrast to the wireless debate before the FCC, which focuses (at least facially) on the practices of network operators, the debate before the Copyright Office focuses explicitly on the practices of device manufacturers.

In that proceeding, the Electronic Frontier Foundation (EFF) filed a petition asking the Copyright Office to create an exemption to permit firms to systematically engage in "jailbreaking" cell phones – that is, disabling content protection and related software that limits the applications they can run and/or the

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<sup>83</sup> *Id* at 14.

<sup>84</sup> *Id* at 17.

<sup>85</sup> *Id* at 18-19.

<sup>86</sup> *Id* at 26.

<sup>87</sup> *Id* at 25.

<sup>88</sup> *Id* at 31. See also Wu, *supra* note 7, at 30-31.

<sup>89</sup> Notice of Rulemaking for Exemption to Prohibition on Circumvention of Copyright Protection Systems for Access Control Technologies, 73 Red. Reg. 79, 425 (Dec. 29, 2008) (*Notice on Circumvention of Technical Measures*).

networks to which they can connect.<sup>90</sup> The primary target of EFF's petition is Apple:

Apple uses various technological means to prevent owners of the iPhone from loading or executing applications unless they are purchased from Apple's own iTunes App Store or otherwise approved by Apple. iPhone owners eager to run applications legitimately obtained from different sources must decrypt and modify the iPhone firmware in order to allow those applications to function, a process colloquially known as "jailbreaking." There is no copyright-related rationale for preventing iPhone owners from decrypting and modifying the device's firmware in order to enable their phones to interoperate with applications lawfully obtained from a source of their own choosing.<sup>91</sup>

The *EFF Petition* further argues that such locking is not based on technical considerations but represents a "business model decision" that prevents customers from accessing other applications not available via Apple.

Independent software developers who want to sell software through Apple's App Store must pay a 30% commission to Apple. This restriction is not necessitated by the iPhone technology. Rather, the effort to tie the iPhone, as well as independent developers, exclusively to Apple's own App Store is a business model decision on Apple's part, unrelated to any copyright interest in the firmware that operates the iPhone.<sup>92</sup>

EFF's complaint is not limited to Apple's iPhone; it also expresses concerns about Google's G1 handset, which is available exclusively on T-Mobile. According to EFF, the G1

... comes with a number of restrictions that restrict the range of applications that the phone will run. For example, only a jailbroken G1 phone can run a full array of Unix tools in the background to enable automated functions such as appointment reminders or scanning for nearby wireless hotspots. In addition, the G1 as delivered will run applications only from the phone's built-in memory; jailbroken G1 phones allow the user to bypass the limits of the G1's internal storage, allowing the phone to run applications from SD memory expansion cards.<sup>93</sup>

Perhaps not surprisingly, Skype filed comments supporting EFF's proposal and opposing "any attempts to restrict the ability of individuals to use devices

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<sup>90</sup> *In the Matter of Exemption to Prohibition on Circumvention of Copyright Protection Systems for Access Control Technologies*, U.S. Copyright Office, Library of Congress, Docket No. RM 2008-08, *Comments of the Electronic Frontier Foundation*, (Dec. 1, 2008) (*EFF Petition*).

<sup>91</sup> *EFF Petition* at 4-5.

<sup>92</sup> *EFF Petition* at 5.

<sup>93</sup> *EFF Petition* at 6.

and software applications of their choice on wireless networks.”<sup>94</sup> But while the EFF petition is clearly aimed at *device manufacturers*, Skype’s comments seek to portray the offending conduct as emanating from *carriers*:

[U]sers should be able to use their choice of devices and software applications on wireless networks rather than being limited to those devices and applications that are “approved” *by the wireless carrier*. Allowing end users to choose the devices and applications they use gives them access to a much wider array of devices and applications than would restricting their choices to those offered by wireless carriers acting as gatekeepers – particularly in instances *where carriers restrict access* to applications, such as Skype, that may threaten part of their business model.<sup>95</sup>

Skype is not alone in attempting to blame carriers for any and all limitations on wireless devices, applications, and content. As we explain further below, however, many of the business practices about which Skype and others complain cannot be explained, factually or, in many cases, even theoretically, as anticompetitive conduct by carriers.

#### *D. Proposals to Expand the FCC’s Net Neutrality Principles and Apply Them to Wireless*

Both the *Skype Petition* and the *RCA Petition* propose to develop and apply new regulatory regimes specific to the wireless industry. Another approach, which is supported by several interest groups and companies (and, FCC Chairman Genachowski) is to apply the FCC’s four “Net Neutrality Principles” (possibly soon to be supplemented by a fifth and sixth) to the wireless sector.<sup>96</sup>

As noted above, the FCC’s Net Neutrality Principles were adopted in the Commission’s 2005 *Internet Policy Statement*. At the time, the Commission stated that its goal was to provide “guidance and insight into its approach to the Internet and broadband” consistent with Congressional guidance, and to “encourage broadband deployment and preserve and promote the open and interconnected nature of the public Internet.” Specifically, the *Internet Policy Statement* declares that consumers are entitled to:

1. Access the lawful Internet content of their choice;
2. Run applications and use services of their choice, subject to the needs of law enforcement;

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<sup>94</sup> *Exemption to Prohibition on Circumvention of Copyright Protection Systems for Access Control Technologies*, Docket No. RM 2008-8, U.S. Copyright Office, Library of Congress, Comments of Skype Communications S.A.R.L. (February 2, 2009) (*Skype Copyright Comments*) at 4.

<sup>95</sup> *Skype Copyright Comments* at 5 (emphasis added).

<sup>96</sup> The application of net neutrality principles to wireless is also an element of legislation introduced by Reps. Edward Markey and Anna Eshoo on July 31, 2009. H.R. 3458, “The Internet Freedom Preservation Act of 2009” would essentially codify the FCC’s net neutrality principles, add a “non-discrimination” principle, and apply all of the resulting rules to wireless as well as wireline networks.

3. Connect their choice of legal devices that do not harm the network;
4. Competition among network providers, application and service providers, and content providers.

In issuing the *Internet Policy Statement*, the Commission made clear that the principles are not meant to prohibit reasonable network management; and, it indicated that, while it intended to incorporate the principles into its policymaking, no rules were adopted by the statement itself.<sup>97</sup> Thus, it appeared at the time it was issued that the *Policy Statement* did not have the rule of law, but rather would serve as overall guidance for future policy.<sup>98</sup>

In November 2007, however, two non-profit policy advocacy groups, Free Press and Public Knowledge, filed a complaint against Comcast, the country's second-largest cable provider, which effectively asked the Commission to enforce the *Internet Policy Statement* as a *de facto* regulation.<sup>99</sup> Specifically, the complainants asked the Commission to declare that Comcast had violated the Internet Policy Statement by degrading the service of BitTorrent, a peer-to-peer (P2P) file sharing application that uses a decentralized distribution model that can simultaneously download portions of computer files from multiple computers. The following March, Comcast and BitTorrent reached an agreement on how P2P files such as BitTorrent's would be handled by the cable company's network in the future.

Several months after the Comcast-BitTorrent agreement, in August 2008, the FCC released a Memorandum Opinion and Order in the case,<sup>100</sup> which found that Comcast had failed to disclose its network management policy to consumers<sup>101</sup> and that the firm's policy "poses a substantial threat to both the open character and efficient operation of the Internet, and is not reasonable."<sup>102</sup> While it did not assess a fine, the Commission required Comcast to disclose its network practices and submit a compliance plan on "how it intends to transition from discriminatory to non-discriminatory network practices."<sup>103</sup>

Comcast argued on several grounds that the Commission lacked authority to impose a remedy, noting (along with the dissenting commissioners in the

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<sup>97</sup> See *Internet Policy Statement* at ¶5.

<sup>98</sup> See *Internet Policy Statement, Statement of Michael J. Copps, Concurring*. See also, FCC, News Release, *Chairman Kevin J. Martin Comments on Commission Policy Statement* (Aug. 5, 2005) (Martin Statement) (available at [http://hraunfoss.fcc.gov/edocs\\_public/attachmatch/DOC-260435A2.pdf](http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-260435A2.pdf)).

<sup>99</sup> See *Appropriate Framework for Broadband Access to the Internet over Wireline Facilities*, CC Docket Nos. 02-33, 01- 337, 95-20, 98-10, GN Docket No. 00-185, CS Docket No. 02-52, WC Docket No. 07-52, Petition for Declaratory Ruling of Free Press, *et al* (Nov. 1, 2007) at 7 (*Free Press Petition*).

<sup>100</sup> See *Comcast Order*.

<sup>101</sup> *Comcast Order* at ¶¶52-53.

<sup>102</sup> *Comcast Order* at ¶51.

<sup>103</sup> *Comcast Order* at ¶ 54.

decision)<sup>104</sup> that the *Internet Policy Statement* did not establish enforceable rules. The Commission disagreed, citing its ancillary authority under multiple provisions of the Telecommunications Act.<sup>105</sup> Comcast has appealed the Commission's decision, and as of summer 2009, the case awaits review by the D.C. Circuit.<sup>106</sup>

Even as the legal standing of the four principles remains in doubt, some net neutrality advocates have suggested adding a fifth principle<sup>107</sup> prohibiting "discrimination." Indeed, in his statement on the *Comcast Order*, Commissioner Michael Copps argued passionately that a nondiscrimination principle was needed:

While today's *Order* represents important movement forward, it is not a full substitute for the fifth principle that I believe we must adopt. A clearly-stated commitment of non-discrimination would make clear that the Commission is not having a one-night stand with net neutrality, but an affair of the heart and a commitment for life.<sup>108</sup>

The apparent focus of the proposed fifth principle is to ensure that all "communications on the Internet" be treated equally, a further tenet of "neutrality." Several commenters have used the Commission's recent Notice of Inquiry on a National Broadband Plan (the "Broadband NOI")<sup>109</sup> as an opportunity to promote such a regulation. For example, Free Press's comments in the Broadband NOI argue that:

These [net neutrality] rules must ensure equal treatment for all communications on the Internet regardless of their source, ownership, destination, application or content. No Internet packets should be given priority over others – whether the priority comes in the form of access, latency or bandwidth.<sup>110</sup>

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<sup>104</sup> *Comcast Order, Dissenting Statement of Commissioner Robert M. McDowell, Dissenting Statement of Commissioner Deborah Taylor Tate* (associating herself with the "procedural and substantive legal argument of Commissioner Robert McDowell.").

<sup>105</sup> *Comcast Order* at ¶¶12-17. The Commission reiterated its authority to enforce the Four Principles in the *Broadband NOI*. See *Broadband NOI* at ¶47, citing the *Comcast Order* ("More recently, the Commission clarified its authority to enforce those principles....")

<sup>106</sup> There is significant debate in the academic community about whether the FCC's ancillary authority will support enforcement of the Four Principles or other net neutrality regulations. See, e.g., Kevin Werbach, "Off the Hook," *Cornell Law Review* (forthcoming 2010) (available at <http://ssrn.com/abstract=1371222>); and Barbara Esbin and Adam Marcus, "'The Law is Whatever the Nobles Do': Undue Process at the FCC," *CommLaw Conspectus* 17:2 (2009) 535-655.

<sup>107</sup> In his September 21, 2009 speech, Chairman Genachowski also suggested adoption of a sixth principle relating to transparency (i.e., a requirement for network operators to disclose their network management practices).

<sup>108</sup> *Comcast Order, Separate Statement of Commissioner Michael J. Copps*.

<sup>109</sup> *A National Broadband Plan for Our Future, Notice of Inquiry*, FCC 09-31, GN Docket No. 09-51 (April 8, 2009) (*Broadband NOI*).

<sup>110</sup> *Broadband NOI*, Comments of Free Press at 163-165. Specifically, Free Press encourages the FCC to apply the following three definitions of non-discrimination: "First, nondiscrimination rules must prohibit Internet access providers from blocking,

Similarly, joint comments by Public Knowledge, Media Access Project, The New America Foundation, and U.S. PIRG explained that:

At its heart, nondiscrimination in the Internet context means that no piece of data is preferred over another piece of data based on *anything* other than which user that data [ ] is from or specific preferences users have affirmatively request[ed] ... This means that an ISP may not alter how it treats a piece of data based on where on the Internet it is being sent, what type of protocol it uses, what type of data it contains unless the consumer has affirmatively requested it, and in that case that data's treatment may only be altered with respect to that user's other data.<sup>111</sup>

In its *Notice of Inquiry* in the Skype proceeding, the Commission sought comment on a non-discrimination principle, which it said would potentially prohibit “any exclusive or preferential arrangements among network platform or access providers and content providers.”

We also ask whether we should incorporate a new principle of “nondiscrimination.” If so, how would “nondiscrimination” be defined, and how would such a principle read? Would it permit any exclusive or preferential arrangements among network platform or access providers and content providers? How would a principle of non-discrimination affect the ability of content and access providers to charge their customers different prices, or to charge them at all?<sup>112</sup>

Here the Commission appears to focus on conduct by *both* content and access providers. As we explain below, however, in the wireless context, a non-discrimination rule would inevitably extend, as a practical matter, to applications providers and device manufacturers, *i.e.*, to the entire wireless system.

There is some debate today about whether the Net Neutrality Principles already apply to the wireless sector. Several parties have recently asked the Commission to end the ambiguity by applying all five principles – the four Internet Policy Statement Principles plus the prospective fifth “non-discrimination” principle, to wireless. For example, Public Knowledge, Media Access Project, The New America Foundation, and U.S. PIRG argue in their National Broadband Plan filings that the five principles should be applied to all broadband Internet platforms, regardless of technology,<sup>113</sup> and Free Press makes

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discriminating against or otherwise degrading any lawful content, applications or services... Second, nondiscrimination rules must prohibit network operators from selling or offering any capacity to prioritize some Internet packets over others, whether to a third party or to an affiliate... Finally, nondiscrimination rules must prohibit Internet access providers from charging additional fees to allow specific types of Internet content, applications or services to be used.”

<sup>111</sup> *Broadband NOI*, Comments of Public Knowledge, Media Access Project, The New America Foundation, and U.S. PIRG at 8.

<sup>112</sup> *Broadband Industry Practices, Notice of Inquiry* at ¶10.

<sup>113</sup> *Broadband NOI*, Comments of Public Knowledge, Media Access Project, The New America Foundation, and U.S. PIRG at 8.

the same argument in an April 2009 *ex parte* filing.<sup>114</sup> Similarly, Google states in its filing in the *Broadband NOI* that “[T]he FCC should acknowledge that its *Internet Policy Principles* apply to all broadband platforms and are legally enforceable.”<sup>115</sup> In his September 21, 2009 speech, Chairman Genachowski made clear that, at least as a general matter, he agrees.<sup>116</sup>

#### E. *Wireless Non-Discrimination and Non-Exclusivity Regulation in Practice*

What would it mean in practice to apply the proposed regulations discussed above to wireless? While it is not possible to predict the precise parameters of an as-yet-unwritten rule, it is possible to assess the potential effects of non-discrimination/non-exclusivity regulations as envisioned by their supporters.

Three aspects of the proposed regulations are worthy of particular emphasis. First, the scope of ostensibly offending business practices is extremely broad. Indeed, the proponents of increased wireless regulation see all forms of discrimination and exclusivity as harmful to both consumers and competition. From the perspective of consumers, such provisions are said to limit consumers’ ability to utilize the devices and applications, and to access the content, of their choice. By reducing consumer choice, such practices allegedly make consumers *prima facie* worse off. The alleged damage to competition is essentially the other side of the same coin: By denying some competitors the ability to market their wares on any network using any device in conjunction with any application, the offending practices are said to inhibit competition and limit the returns to innovation.

Second, at least some wireless regulation advocates seek to ban various business practices not because they reduce economic welfare but because they allegedly *violate consumer rights*. Thus, non-discrimination and non-exclusivity regulations are not presented in terms of a balancing of benefits against costs, as is typical in a traditional regulatory or competition law context, but rather as the upholding of non-controvertible consumer rights, with any resulting costs to be, if not ignored, then at a minimum discounted. Indeed, the only limiting principle that has been openly acknowledged by regulation advocates is technical feasibility, *i.e.*, the need for “reasonable network management.”<sup>117</sup> This concept

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<sup>114</sup> *Free Press Letter* at 1.

<sup>115</sup> *Broadband NOI*, Comments of Google, Inc. 28.

<sup>116</sup> See Genachowski at 6 (“The principles I’ve been speaking about apply to the Internet however accessed, and I will ask my fellow Commissioners to join me in confirming this.”)

<sup>117</sup> While some advocates of increased wireless regulation concede the need for network management on wireless networks may be greater than in the wired realm, their response is for the FCC to craft “narrowly tailored” exceptions. See *Broadband NOI*, Comments of Free Press at 166-67 (“The technological considerations arising in wireless networks do vary from those in wired networks – and in many circumstances, mobile wireless devices and networks exhibit reduced capacity when compared to their wired brethren. But this does not mean that wireless network operators are somehow technologically unable to comply with the basic principle of nondiscriminatory treatment of content, services, and applications. Nor does it mean that wireless network operators will be wholly without recourse to address technological problems that arise in their networks. The Commission can and should develop an open network policy that permits



– rights limited only by technical feasibility – is explicitly embraced in the *Internet Policy Statement*.

Third, while the proposed regulations are, as a matter of semantics, typically targeted at network operators,<sup>118</sup> their effects would necessarily extend equally to all parts of the wireless ecosystem, including device manufacturers and providers of applications and content. While the aspirations of regulation advocates to regulate upstream firms are most clearly evident in the *EFF Copyright Petition*, which unapologetically targets handset and application providers directly, the upstream effects of regulation by the FCC would be equally profound. This is certainly true as a matter of form: First, to the extent discriminatory or exclusive provisions are embodied in contracts between carriers and upstream firms, the proposed rules could simply forbid carriers from entering in to such agreements; and, second, even in the absence of an agreement, the Commission could attempt to prohibit carriers from using devices or applications that implement discriminatory practices (such as Apple's refusal to allow "jailbreaking" of its operating system). At least potentially, then, the fact that the FCC does not formally have jurisdiction over Google, for example, would not stop it from effectively regulating the Android operating system.<sup>119</sup>

In fact, the upstream effects of the proposed rules would be profound, since the offending behavior is often desired by (and negotiated for) the upstream firms. A regulation that prohibits AT&T from having exclusive rights to the iPhone, for example, also prohibits Apple from assigning those rights on an exclusive basis to AT&T.

With these three points in mind, consider how wireless regulation would work in practice at each of three levels of the wireless marketplace – devices, applications, and content.

Devices: Advocates of device regulation seek to ban all exclusive or discriminatory arrangements with respect to device distribution and functionality. On the face of it, their proposals potentially could require that: (a) any device distributed for use on one network also be available for use on any other network

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the use of reasonable, narrowly tailored mechanisms to address congestion and other network problems, while maintaining compliance with the nondiscriminatory policies that are central to the benefits of open networks.”)

<sup>118</sup> See e.g., *Broadband NOI*, Comments of Free Press at 163-165 (phrasing its proposed non-discrimination rules as prohibitions on conduct by “Internet access providers”).

<sup>119</sup> These issues are squarely presented in the Commission's recent request for information into the basis for Apple's decision not to offer Google Voice through the iPhone Apps store. In that matter, both AT&T and Apple aver that the decision to exclude Google Voice was exclusively Apple's. Hence, in the guise of regulating allegedly anticompetitive conduct by telecommunications carriers, the FCC now finds itself in the position, potentially, of seeking to extend its authority to conduct in the markets for wireless handsets, operating systems, and applications. (See, e.g., Fawn Johnson and Amy Schatz, “FCC Opens Inquiry of Apple's Ban of Google Voice,” *The Wall Street Journal* (August 1, 2009); and, “Apple Answers the FCC's Questions,” (August 24, 2009) available at <http://www.apple.com/hotnews/apple-answers-fcc-questions/>).

with no differences in basic functionality (e.g., a phone distributed with Wi-Fi functionality by one carrier must also have Wi-Fi functionality when distributed by other carriers); and, (b) all devices be capable of switching from one network to another (“untethering”), so long as there is no underlying technological incompatibility. (For example, a wireless operator of a 4G LTE network presumably would not be required to modify the network to work with devices designed for Wi-Max networks.)

A ban on contractually enforced device exclusivity would, by definition, affect both parties to such contracts: Carriers would be prohibited from entering into contracts with manufacturers that limit manufacturers’ rights to distribute their phones through other carriers; and, manufacturers would be prohibited from entering into contracts that include such commitments.<sup>120</sup> If regulation stopped at prohibiting only *contractually enforced* exclusivity, manufacturers would still be free (at least under current antitrust precedents) to engage unilaterally in exclusive dealing – that is, to distribute their handsets only through the carriers of their choice, and even to use technological or other means to limit consumers’ ability to port their handsets to other networks. It is clear, however, that regulation advocates at least seek to go further: By imposing a *Carterphone* style standardization regime (as the *Skype Petition* proposes) and allowing commercial firms to engage in “jailbreaking” (as called for in the *EFF Petition*), they seek to make even unilaterally-imposed exclusivity impossible to enforce in practice. That is, they seek to make it impossible, for example, for Amazon to choose a single carrier (currently, Sprint) as the sole provider of connectivity for its Kindle reader.<sup>121</sup>

Applications: Advocates of increased wireless regulation also seek to mandate non-discrimination and prohibit exclusivity in the applications realm. For Skype, this means that carriers would be required to accommodate the use of VoIP services on a “non-discriminatory” basis, a term that includes not only facilitating the consumer’s ability to load the Skype software on their phone, but also forswearing “discriminatory” pricing structures (e.g., higher rates for data, lower rates for voice).<sup>122</sup>

But such a non-discrimination/non-exclusivity mandate at the applications level could have much broader implications than just smoothing the way for Skype. In the Copyright Office proceeding, for example, EFF makes clear that its purpose is to forbid any type of exclusivity or discrimination affecting any

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<sup>120</sup> As we explain below, there are strong efficiency rationales for manufacturers to contractually commit themselves to distributor exclusivity.

<sup>121</sup> We are inclined to agree with industry analyst Craig Moffett that such regulations are “almost unthinkable,” yet this is precisely what advocates of increased wireless regulation have called for. See Moffett (July 2009) at 3 (“Regulating handset exclusivity would, in practice, mean dictating subsidies and pricing to both carriers and handset makers, something that is very unlikely. And since every network in the U.S. runs on a different technology standard, putting teeth into regulation would mean dictating technology development to the handset makers, which is almost unthinkable (it’s a bit difficult to imagine Apple being forced to design a CDMA compatible iPhone).”)

<sup>122</sup> See, e.g., *Free Press Broadband NOI Comments* at 164 (“Finally, non-discrimination rules must prohibit Internet access providers from charging additional fees to allow specific types of Internet content, applications or services to be used.”)

applications, *e.g.*, to prohibit Apple from limiting which applications can run on the i-Phone.<sup>123</sup> Just as with devices, it is not clear to what lengths carriers and applications developers would be forced to go to promote interoperability, *e.g.*, whether or to what extent Google would be required to modify its Android operating system in order to ensure it is compatible with other cell phone operating systems (thus allowing all applications to run on Android-based as well as other devices). What does seem clear, however, is that agreements between carriers and applications providers to discriminate in favor of some applications over others (*e.g.*, the agreement between Verizon and Microsoft for the latter to serve as the exclusive default search engine on Verizon phones) would be presumptively illegal.

Content: The third “layer” to which the proposed wireless regulations would apply is content. In the wireline world, the prohibition against discriminating on the basis of content is typically thought of in terms of network management and prioritization. An example is whether AT&T (or Verizon or Comcast or Cox) should be permitted to assign a lower priority to bits associated with BitTorrent or related services in order to reduce network congestion and allow better performance by latency-sensitive applications (*e.g.*, voice, video conferencing or real-time gaming). Concerns are also expressed (though virtually no evidence has emerged to suggest their validity) about the possibility that ISPs might discriminate against some forms of Internet traffic or in favor of others for purely economic reasons, *e.g.*, that an ISP might sign an exclusive deal with Amazon.com that would limit its users’ ability to visit the Barnes & Noble web site.

Thus far, neither set of issues has garnered significant attention in the wireless space, but both are likely to pose challenges in the future if non-exclusivity and/or non-discrimination mandates are applied to wireless content. For example, as watchers of the Fox hit series “24” know, only Sprint subscribers have access to unique content, including expanded previews of upcoming shows. Indeed, content exclusivity appears to be fairly common in the wireless arena, applying not only to video but to music download and streaming services as well. On the face of it, at least, such arrangements would seem to violate a non-discrimination/non-exclusivity mandate.

In summary, while no one can predict precisely what wireless rules the FCC might adopt, or what specific discriminatory or exclusive business practices would be found to violate such rules, the implications of the proposals discussed here are clear: they would mandate that both wireless carriers and the upstream firms that supply devices, applications, and content forego – to the extent consistent with technical feasibility – any and all exclusive or discriminatory relationships and behaviors.

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<sup>123</sup> As noted above, this precise issue is now before the Commission in its inquiry into Apple’s decision not to approve Google Voice for distribution through the iPhone Apps Store.

#### IV. THE PROPOSED REGULATIONS WOULD REDUCE INNOVATION, DIVERSITY AND CONSUMER CHOICE

Rather than being manifestations of market power, most if not all of the practices that offend regulation advocates are motivated by competition and economic efficiency – that is, by the efforts of profit-maximizing firms to win customers by reducing costs (and hence prices) and offering consumers increasingly diverse and innovative products. Indeed, virtually all of the business practices that would be precluded by the proposed new regulations can be explained by one of three rationales, each of which is associated with competition and economic efficiency, and each of which contributes to innovation, diversity and consumer choice.

First, firms utilize exclusive distribution agreements to reduce the risk of introducing new products, lower transactions costs, and enhance the marketing and services provided with their products. We refer to this as the *transactions cost* rationale.

Second, firms seek to differentiate their products to meet the heterogeneous demands of consumers and in order be able to set prices above marginal cost. In a declining cost industry such as telecommunications, of course, prices must exceed marginal cost or the product will not be provided at all. We refer to this as the *product differentiation* rationale.

Third, much of the behavior that bothers advocates of increased wireless regulation appears to be motivated by the desire of suppliers in competitive markets to produce products that consumers regard as reliable and or high quality, especially when introducing new products or entering new markets. We refer to this as the *product quality* rationale.

In this section we explain each of these three efficiency rationales for discriminatory or exclusive practices. We discuss how these practices affect innovation, diversity and choice in the current market, and we show how the market would be affected if they were weakened or eliminated by the proposed regulations.

##### A. The “Transactions Cost” Rationale: Exclusivity Promotes Innovation and Entry by Reducing Risk, Lowering Transactions Costs and Enhancing Marketing Activities

The wireless business practice that seems to most concern regulation advocates is the practice of carriers and handset manufacturers to enter into exclusivity agreements for the distribution of new cellular devices. Exhibit A, of course, is Apple’s agreement with AT&T concerning the iPhone.<sup>124</sup> As we explain below, however, exclusive distribution of the iPhone is a perfect example of an efficiency-enhancing practice with virtually no likelihood of anticompetitive effects.

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<sup>124</sup> See, e.g., Wu at 7. As noted above, however, the concerns are by no means limited to the iPhone; for example, the RCA Petition also complains, for example, of Verizon’s exclusivity agreement with LG for its Voyager<sup>TM</sup> phone and Sprint Nextel’s agreement with Samsung for its Ace<sup>TM</sup>.

Exclusive dealership arrangements are an efficient response to the free riding problem that may occur when multiple dealers distribute the same product. The free riding problem occurs when promotional efforts by dealers increase *overall* demand for the product, so that each dealer benefits from the promotional efforts of its competitors, or, put differently, fails to capture the full benefit of her own efforts to promote sales. As a result, too little promotion occurs, and sales of the product fall below the economically efficient level. A similar problem may occur with respect to dealer provided services: Each dealer may have incentives to provide suboptimal levels of service quality, since the full effect of doing so on the product's reputation is not borne by the free-riding dealer, but rather is spread across all dealers (and the manufacturer).<sup>125</sup> Finally, exclusivity allows carriers and handset manufacturers to enter into risk sharing arrangements, so that each company bears some of the risk of product failure (while sharing in the upsides of success).

Promotion and service quality are especially important for new entrants offering new products, and the iPhone was an especially complex case, requiring extensive coordination between manufacturing, software, network and retail activities. Accordingly, contrary to what may be popular perception, Apple sought out an exclusive distributor for the phone – not the other way around – and ultimately chose AT&T. As detailed by Hahn, Litan and Singer, Apple's demands included maintaining strict control over the applications that would run on the iPhone, controlling branding, and working directly with customers on maintenance and service issues.<sup>126</sup> Ultimately, of course, Apple's strategy worked: Its *de novo* entry into the wireless handset business was one of the most successful product launches in U.S. history, with more than one million iPhones sold in 74 days.<sup>127</sup>

Another recent example of the significance of exclusivity is the Amazon Kindle, which launched in the U.S. in November 2007, operating exclusively on Sprint's CDMA network. Amazon originally announced plans to launch Kindle in the UK in 2008, but was unable to do so for two reasons: First, it faced

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<sup>125</sup> See, e.g., Dennis W. Carlton and Jeffrey M. Perloff, *Modern Industrial Organization, Fourth Edition*, (Boston: Addison Wesley, 2005) at 418-423.

<sup>126</sup> Hahn, Litan and Singer at 32-33.

<sup>127</sup> See *Apple Copyright Comments* at 4. Any doubt about which company – Apple or AT&T – is driving the terms of the relationship should have been put to rest by the terms of their 2008 agreement for distribution of the iPhone 3G. Under the agreement, AT&T agreed to provide substantial (\$200-\$500) subsidies for new iPhone (rather than paying Apple a portion of the service revenues, as under the original iPhone deal). The result was to heavily dilute AT&T's margins on the new device and ultimately cause it to miss analyst estimates in a quarterly earnings report. One leading industry analyst, JPMorgan's Michael McCormack, wrote that "With dilution running at levels we never fathomed, we believe AT&T is assuming more risk than the previous arrangement. We question whether a handset exclusivity agreement should warrant such a dramatic financial impact while other successful carriers have not found it necessary." Another analyst, Chris King from Stifel Nicolaus, concluded that "Clearly Apple had the upper hand in the negotiations." (See Sinead Carew-Analysis, "Did AT&T Give Too Much for iPhone?" *Reuters* (June 11, 2008) (available at <http://www.reuters.com/article/internetNews/idUSN1137046820080611>).

technological hurdles associated with producing a GSM version of the device that would be compatible with European networks; and, second, it was unable to conclude negotiations with multiple carriers in order to achieve pan-European coverage. Ultimately, Amazon effectively contracted out both issues to Qualcomm, which reportedly will both produce a GSM-compatible Kindle and negotiate agreements for carriage on Amazon's behalf. As a result of these complications, however, Kindle's UK launch was delayed by a year. Of course, if net neutrality regulation had been in place, Amazon would have faced the same technological and contractual hurdles in the U.S. that delayed its launch in the UK.<sup>128</sup>

Exclusivity agreements must also be seen as part of the overall contractual relationship between carriers and handset manufacturers. It is commonplace, for example, for carriers to share in the effort of developing new handsets,<sup>129</sup> and to make large minimum quantity commitments in order to limit the risk to device makers of manufacturing tens or hundreds of thousands of handsets. Exclusivity is a natural and necessary part of such a commitment, as it gives the carrier an opportunity to earn back its investment.<sup>130</sup>

It should be noted that we have not argued that exclusive distribution agreements can *never* represent anticompetitive behavior. Indeed, we made clear above that under specified conditions, exclusivity *can* be motivated by market power. The question, here as with other forms of behavior, is whether exclusivity can also lead to consumer benefits. In this case, as demonstrated by the examples cited above, the evidence is clear that exclusivity does facilitate innovation and consumer choice, and that regulations that prohibited such efficiency-enhancing agreements would slow innovation and reduce choice, precisely the opposite effects from those wireless regulation advocates claim to desire.

*B. The "Product Differentiation" Rationale: Product Differentiation Responds to Heterogeneous Demand and Promotes Competition in Declining Cost Industries*

As Christopher Yoo has pointed out in the context of wireline regulation, proponents of some types of net neutrality see the network infrastructure and the services it provides – *i.e.*, carriage – as a commodity,<sup>131</sup> and seek explicitly to prevent practices that enable product differentiation.<sup>132</sup> There are at least two

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<sup>128</sup> Kindle has not yet launched in Germany, reportedly as a result of Amazon's inability to reach an agreement with either T-Mobile or Vodafone. See Paul Rasmussen, "T-Mobile and Vodafone Stall Kindle Launch in Germany," *Fierce Wireless Europe* (July 1, 2009) (available at <http://www.fiercewireless.com/europe/story/t-mobile-and-vodafone-stall-kindle-launch-germany/2009-07-01>).

<sup>129</sup> See, e.g., Charles L. Jackson, *Wireless Handsets are Part of the Network* (April 27, 2007).

<sup>130</sup> See Joseph Palenchar, "Verizon Caps Handset-Exclusivity Deals," *Twice* (July 17, 2009) (available at [www.twice.com/article/315672-Verizon\\_Caps\\_Handset\\_Exclusivity\\_Deals.php](http://www.twice.com/article/315672-Verizon_Caps_Handset_Exclusivity_Deals.php)).

<sup>131</sup> See Yoo at 73.

<sup>132</sup> Professor Wu, for example, states simply that "Spectrum bandwidth is a commodity." See Wu, *supra* note 2, at 30.

problems with this approach. First, as a factual matter, wireless networks are differentiated by nature: They differ in the technology used (GSM vs. CDMA vs. Wi-Max), the areas covered, the quality of the underlying software and systems (which can affect such things as dropped calls), the system capacity (relative to usage), and dozens of other characteristics.

Second, at a more fundamental level, wireless regulation advocates see differentiation as a problem to be solved, or put differently, they “regard commoditization as being inherently pro-competitive.”<sup>133</sup> To the contrary, as Yoo explains, commoditization

can exacerbate the impact of up-front, fixed costs and network economic effects, which are the most commonly identified sources of market failure that justify the regulation of telecommunications markets. Specifically, the existing debate has largely overlooked how product differentiation can ameliorate both of these effects and allow smaller producers to survive despite having lower sales volumes and higher per-unit costs.<sup>134</sup>

Yoo’s point is hardly a controversial one. To the contrary, it is well understood that product differentiation in declining cost industries not only makes competition possible, but is generally beneficial to consumer welfare.<sup>135</sup> As Hal Varian, now chief economist at Google, explained in 1996:

[M]any important industries involve technologies that exhibit increasing returns to scale, large fixed and sunk costs, and significant economies of scope. Two important examples of such industries are telecommunications services and information services. In each of these cases the relevant technologies involve high fixed costs, significant joint costs and low, or even zero, marginal costs. Setting prices equal to marginal cost will generally not recoup sufficient revenue to cover the fixed costs and the standard economic recommendation of “price at marginal cost” is not economically viable. Some other mechanism for achieving efficient allocation of resources must be found.<sup>136</sup>

The solution, Varian demonstrates, is product differentiation, which in turn allows for differential pricing – that is, for firms to provide products, such as the fastest network, or the most extensive international coverage, or the coolest new handset – for which consumers are prepared to pay a price in excess of marginal cost. As Varian explains, “(i) efficient pricing in such environments will typically involve prices that differ across consumers and type of service; (ii) producers will want to engage in product and service differentiation in order for

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<sup>133</sup> See Yoo at 9.

<sup>134</sup> *Id.*

<sup>135</sup> See e.g., Edward H. Chamberlin, *The Theory of Monopolistic Competition: A Re-Oriented of the Theory of Value* (Cambridge: Harvard University Press, 1933); Joan Robinson, *The Economics of Imperfect Competition* (London: Macmillan and Co., 1933), and Carlton and Perloff, Chapter 4.

<sup>136</sup> Hal R. Varian, “Differential Pricing and Efficiency,” *First Monday* 1:2 (August 1996) at 2.

this differential pricing to be feasible; and, (iii) differential pricing will arise naturally as a result of profit seeking by firms. It follows that differential pricing can generally be expected to contribute to economic efficiency.”<sup>137</sup>

Moreover, under realistic conditions (*i.e.*, that consumers have heterogeneous tastes and that there are fixed costs associated with producing different product varieties), the resulting degree of product differentiation is economically efficient: That is, the market offers the optimal number of choices, in the sense of meeting consumers’ demand for product diversity.<sup>138</sup>

The crucial point, which advocates of increased regulation seem not to comprehend, is that diversity and innovation are simply the static and dynamic terms, respectively, for the same phenomenon: if you take a snapshot of an innovative market, what you see is diversity. At any given time, some suppliers are ahead in the technological race, while others are behind; some are pursuing old business models while others are trying out new ones, etc. To eliminate diversity, simply put, is to eliminate innovation.<sup>139</sup>

Ultimately, such competition is important because it is an improvement on Henry Ford’s dictum of 100 years ago that customers could have any color Model T “so long as it’s black.” But product differentiation in the modern wireless market – while including a choice of handset colors – extends to every dimension of consumer choice, from the type of network one uses to the nature of the business model. Indeed, the search for a “model” of what the customer wants is a key aspect of innovation in markets generally and in the wireless market in particular. Examples abound. “Pre-paid” plans have gained ground recently against “post-paid” plans, demonstrating customer interest in that approach. Similarly, “all you can eat” plans have gained relative to metered plans.

Perhaps the most successful “business model” innovation in the U.S. has been the decision by wireless carriers to heavily subsidize cell phones and, more recently, “netbook” laptop computers. Consumers still have the choice of

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<sup>137</sup> *Id.* at 2. The fact that wireless carriers cross-subsidize is well understood in the industry. See, *e.g.*, Moffett at 3 (“More broadly, though, what’s at issue [in the policy debate] is the very notion of cross-subsidy in telecom. Right now, the TelCos make some money in a few places and lose it in a few others.”)

<sup>138</sup> Avinash K. Dixit and Joseph E. Stiglitz, “Monopolistic Competition and Optimum Product Diversity,” *American Economic Review* 67 (1977) 297; Oliver D. Hart, “Monopolistic Competition in the Spirit of Chamberlin: A General Model,” *Review of Economic Studies* 52 (1985) 529; Sherwin Rosen, “Hedonic Prices and Implicit Markets: Product Differentiation in Pure Competition,” *Journal of Political Economy* 82:1 (January-February 1974) 34-55; and Jean Tirole, *The Theory of Industrial Organization*, (Sixth ed., 1993) at 278 (“[F]irms generally do not want to locate at the same place in the product space .... [N]ot all technically feasible goods will be produced. Often two or three models are selected even though thousands are possible *a priori*. This incomplete spectrum is closely related to the existence of fixed costs....”)

<sup>139</sup> See Robert Hahn and Hal J. Singer, “Why the iPhone Won’t Last Forever and What the Government Should Do to Promote Its Successor,” Georgetown Center for Business and Public Policy (September 2009) (available at [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1477042](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1477042)).



purchasing “unlocked” phones, which they can use on any compatible network – and many do. Yet the vast majority choose to get their phones from carriers at heavily discounted prices, in return for a minimum contract term which, in some cases, is enforced by limiting the ability of the device to work on other networks. Attempts to make such contracts more difficult to enforce are not, as advocates of increased regulation suggest, pro-choice. To the contrary, they are an attempt to replace an expression of consumer sovereignty with bureaucratic diktats based on the tastes and preferences of a particular group which values portability over affordability.<sup>140</sup>

More broadly, these “model” questions are the very ones advocates of increased regulations seek to resolve by edict. Wireless providers *as a group* already provide consumers with a full range of choices regarding what to hook up, how to pay, what they’re buying, and the like, having been driven to do so by this kind of “model” competition. Having every provider offer the same set of services does away with this competition and substitutes the judgment of the “neutrality” advocates, who would do away with diversity and replace it with commoditization. Rather than a response to a non-competitive market, it is a prescription for turning a *competitive market* into an *uncompetitive* one.

Advocates of increased wireless regulation claim that the *Carterphone* principles spawned competition in consumer premises equipment, ultimately leading to fax machines and computer modems. What they ignore, however, is that competition among networks – made possible beginning in the 1970s by the entry of MCI and then Sprint into the long distance business – accelerated the deployment of fiber in America’s telecommunications networks by a decade or more,<sup>141</sup> and that it took competition and innovation in *both* the core and the edges of the network to ultimately enable the Internet. By the same token, it is clear today that competition among cell phone carriers – including Clearwire’s “maverick” entry using Wi-Max technology – is speeding innovation and investment in wireless networks (just as “platform competition” between fiber and cable are speeding innovation and spurring investment in the wireline market).<sup>142</sup>

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<sup>140</sup> Note that the way handset subsidies work, high volume users effectively subsidize low volume users by using more services (and paying more for them) during the terms of their contracts. This is a presumptively efficient and welfare-maximizing form of price differentiation.

<sup>141</sup> See, e.g., Philip J. Weiser, Testimony Before the United States House of Representatives, Committee on Energy and Commerce (March 2, 2005) (available at <http://archives.energycommerce.house.gov/reparchives/108/Hearings/03022005hearing1443/Weiser.pdf>).

<sup>142</sup> See Organisation for Economic Co-operation and Development, Working Party on Communication Infrastructures and Services Policy, *IPTV: Market Developments and Regulatory Treatment* (December 2007) at 11 (“In the United States, where cable modem use is more prevalent than DSL lines, competition is leading to network upgrades. Nationwide fixed-line telecommunication operators such as AT&T and Verizon are actively deploying optical fiber networks to compete with cable TV operators’ multiple play services.”) (available at [www.oecd.org/dataoecd/11/23/39869088.pdf](http://www.oecd.org/dataoecd/11/23/39869088.pdf)); see also Eisenach 2008, at 53-4.

This broader view of competition – one that recognizes the importance of competition among platforms, among upstream devices, and among different “models” of what consumers want – recognizes that innovation and diversity in the different “layers” of wireless markets – networks, devices, and applications – are not independent of each other. To the contrary, innovation in one layer (*e.g.*, handsets) can and does drive innovation in others (*e.g.*, networks, applications, content). Certainly this has been the case with the iPhone, which has not only spurred competition in devices (*e.g.*, the Storm, G1, Pre and many others), but also led to an explosion of new applications and rapid growth in the market for mobile content – which in turn has placed pressure on AT&T to accelerate investment in its network to handle the resulting traffic.<sup>143</sup>

By squelching product differentiation at some or all layers of the wireless ecosystem, regulation advocates would achieve precisely the opposite of what they desire, and risk turning the wireless marketplace into a 21<sup>st</sup> century version of the pre-1984 Ma Bell monopoly.

*C. The Product Quality Rationale: “Network Management” Policies Promote Choice and Innovation*

As noted above, advocates of increased wireless regulation seem to recognize that wireless networks face capacity constraints that do not necessarily apply in the wireline environment. Their answer, however, is to for the FCC to carve out “narrowly crafted” exemptions to its otherwise blanket ban on discrimination.<sup>144</sup> It seems unlikely, however, that such exemptions would be sufficiently flexible or forward looking to accommodate the rapidly changing nature of the wireless marketplace: Simply put, any exemption flexible enough to give wireless carriers confidence in their ability to manage new problems would probably not be “carefully crafted” enough to satisfy proponents of more intervention in the wireless market.

To the extent additional regulations did prohibit or discourage effective network management, the result would be to increase the risk of introducing new products and applications. This is because, as Chris Yoo has explained in the wireline context, network management policies contribute to innovation by allowing carriers to manage the unpredictable changes in network demand associated with applications:

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<sup>143</sup> See *e.g.*, Martin Peers, “Demands on Network Are an iPhone Hang-Up,” *Wall Street Journal* (May 11, 2009) at c8 (“Web applications popular with iPhone customers are bandwidth hogs. A recent analysis by Alcatel-Lucent of North American wireless network use during the midday hour on one day found Web browsing was consuming 32% of data related airtime but 69% of bandwidth, while email used 30% of data airtime but only 4% of bandwidth.”); Moffett 2009 at 2 (“AT&T’s wireless network is now being overtaxed by the voracious data appetites of iPhone users. At an estimated 500 megabytes per month, the average iPhone user consumes as much as 10x as much capacity as the average smartphone user. A normal bell curve distribution would suggest that many iPhone subscribers are using well in excess of the 5 GB per month laptop card limit.”) and Rysavy Research *Mobile Broadband Spectrum Demand* (December 2008); and “AT&T Plans Major Expansion of 3G Wireless Broadband in 2008”) (available at [www.att.com/gen/press-room?pid=4800&cdvn=news&newsarticleid=25146](http://www.att.com/gen/press-room?pid=4800&cdvn=news&newsarticleid=25146)).

<sup>144</sup> *Supra*, n. 117.

[D]ecisions about capacity expansion can be difficult when facing uncertainty about the magnitude, heterogeneity, and variability of the demand that will be placed on the network. Decision-making is complicated still further by the “lumpiness” of network capacity created by the indivisibility of fixed costs and the fact that increasing network capacity typically takes a considerable amount of time.

In such an environment, it seems counter-productive to tie network owners’ hands by limiting the number of ways in which they can manage network demand.<sup>145</sup>

The iPhone’s unpredicted impact on network utilization is a perfect example of why it is essential for wireless carriers to manage flexibly their networks. As this paper is written, for example, AT&T is being criticized by some consumer advocates for not allowing “tethering” of the new iPhone 3G-S (that is, attaching it to a laptop for use as a wireless modem), and for not permitting users to embed high bandwidth video in MMS texting services. Yet, there is significant evidence that the bandwidth demands already being placed on AT&T’s network by smartphone users (iPhone and otherwise) are adversely impacting user experiences, at least in densely populated areas.<sup>146</sup> We do not believe consumers would benefit by threatening AT&T with an FCC enforcement action because it refuses, until its network can be further upgraded, to permit the use of applications that diminish the quality of its network services for all users.

As with the other types of practices we have discussed, “network management” issues are not limited to the network layer. Apple’s response to the EFF petition to permit “jailbreaking” details the fact that its ability to retain control over the iPhone operating system and applications is essential to its ability to ensure quality, and was especially important at the time it was originally launched.

When the iPhone was first introduced, a user could access and utilize web applications, but the device did not interoperate with any applications software that a consumer might download from a third party. *Apple briefly delayed support for third party applications in order to safeguard the security, reliability and functionality of the iPhone and its brand-new operating system, and by extension the consumer’s overall experience with and enjoyment of the phone.* This decision did not dampen overall consumer enthusiasm for the product, and Apple continued to develop and refine the iPhone technology and maintain and improve its security, reliability and overall functionality.

After Apple overcame the initial hurdle of successfully launching the iPhone, it turned to third party applications, using an approach to foster the development of third party applications that has also been hailed as revolutionary.<sup>147</sup>

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<sup>145</sup> See Yoo, *supra* note 2, at 22.

<sup>146</sup> Moffett, July 2009 at 2-3.

<sup>147</sup> *Apple Copyright Office Brief* at 4 (emphasis added).

Further, as Apple explains, the limited amount of “jailbreaking” that has occurred has validated its concerns about the potential impact on product quality and user experiences.

Apple’s iPhone support department has received literally millions of reported incidents of software that crashes on jailbroken iPhones, although it works properly on unmodified iPhones. For example, one recent software crash caused by jailbroken phones was reported over 1.6 million times from users of just 10,000 jailbroken phones. Two other recent crashes caused by jailbroken phones were reported over 2 million times and over 2.4 million times, respectively. Apple has also become aware that some jailbroken versions of the bootloader make it impossible to update the baseband processor (BBP) in the iPhone, which controls the ability of the iPhone to connect up to the telephone network and make calls. Because each update that Apple distributes to the BBP contains updates and fixes, a phone that cannot update the BBP will potentially experience problems making calls. When that happens, Apple’s support department gets flooded with calls.<sup>148</sup>

As a final example, it is noteworthy that Clearwire – a new entrant in the wireless space which cannot possibly be accused of possessing market power – practices what investor Google calls “reasonable and competitively-neutral network management.” That is, its terms of service, like those of the major carriers, expressly and unconditionally reserve the carrier’s right to limit bandwidth to users in order to prevent network congestion.<sup>149</sup> For a new entrant, the ability to manage bandwidth demands is likely to be especially important, as it has no historical basis upon which to predict demand and its network is likely to be less redundant and robust than that of a more mature carrier.

By making it more difficult to manage the risk of innovation and entry, prohibitions on network management would thus, again, slow innovation and reduce consumer choice, the opposite of what proponents of such regulation say they desire.

## V. CONCLUSION

Ultimately, we conclude that current proposals to increase regulation of wireless services suffer from (at least) three serious flaws.

First, the proposed regulations are overbroad. On their face, the existing proposals would presumptively prohibit a wide range of business practices.

<sup>148</sup> *Exemption to Prohibition on Circumvention of Copyright Protection Systems for Access Control Technologies*, Docket No. RM 2008-8, Responsive Comment of Apple Inc. in Opposition to Proposed Exemption 5A and 11A (Class #1), U.S. Copyright Office, Library of Congress at 16.

<sup>149</sup> See Larry Alder, “Investing in the Future of the Open Internet,” *The Official Google Blog* (May 7, 2009) (available at <http://googleblog.blogspot.com/2008/05/investing-in-future-of-open-internet.html>). See also Clearwire, *Terms of Service* (available at <http://www.clearwire.com/company/legal/terms.php>; accessed August 28, 2009) and Clearwire, *Acceptable Use Policy* (available at <http://www.clearwire.com/company/legal/aup.htm>; accessed August 28, 2009).

Indeed, taken at face value, they would appear to prohibit a wide variety of practices about which even regulation advocates have expressed no concerns. Moreover, the only limiting principle regulation advocates concede is technical feasibility, a standard which effectively precludes a weighing of benefits against costs to maximize consumer welfare.

Second, no market failure has been shown to exist in the markets at issue. While some of the behaviors that would be banned *might* merit further investigation *if* a plausible case could be made that there was significant market power in the market for carriage, no such showing has been made. Other to-be-proscribed business practices cannot be ascribed to market power in the market for carriage, *even as a matter of theory*; they are only potentially anticompetitive if there is market power in one or more of the upstream markets. For the most part, upstream markets appear to be highly competitive, and regulation advocates have made no notable efforts to demonstrate otherwise.

Third, the behaviors at issue are all easily explained on the basis of economic efficiency. Indeed, virtually all of the to-be-proscribed business practices contribute to innovation and consumer choice, the very values regulation advocates say they seek to protect.

Thus, while there is a place for competition policy oversight of all sectors of the economy, including the wireless industry, it is clear that the adoption of *ex ante*, one-size-fits-all rules would be an inefficient and potentially very damaging means of exercising such oversight with respect to the wireless communications industry, as they would have the undesirable effect of banning or discouraging a great deal of pro-competitive, pro-consumer behavior. Rather, policymakers should adopt a case-by-case approach based on fact-specific inquiry, the requirement for a clear showing of market power and anticompetitive effects, and a careful evaluation and balancing of consumer benefits and harms associated with potential remedies.